ENGINEERING and MINING JOURNAL.

VOL. XXVII., No. 11.

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SUBSCRIPTION PRICE, including postage, for the United States and Canada, $4 per annum; $2.25 for six months; European countries, including postage, $5.00 = 20s. = 25 francs = 20 marks. South American countries, including postage, $6 = £1 5s. All payments must be made in advance.

REMITTANCES should always be made by Post-Office Orders or Bank Drafts on New York, made payable to THE SCIENTIFIC PUBLISHING COMPANY.

THE SCIENTIFIC PUBLISHING CO., PUBLISHERS,
27 Park Place, New York.

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THE NEW DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY.

It is reported from Washington that Mr. CLARENCE KING will be nominated by the President as Director of the Geological Survey. While the matter was still pending, we avoided the public and personal discussion of the claims of different candidates, contenting ourselves with emphasizing the qualifications which the position in our judgment required. But now that the appointment seems to have been settled upon in the mind of the President, we have no reason to withhold our opinion, entertained from the beginning, that Mr. KING is the very best man who could have been selected. The general and impersonal picture which we have given in former articles of the ideal Director, will appear, on examination, to be little else than a portrait of CLARENCE KING. But, aside from questions of character, experience, versatile accomplishments, and executive ability, combined with the requisite professional knowledge—all of which Mr. KING possesses in high degree—his appointment may be particularly welcomed as acceptable to scientific and industrial interests generally, and especially as tending to secure from the outset that harmony of action between the civil and the military authorities upon which the success of the new system will largely depend. Mr. KING has worked under the Chief of Engineers, understands the methods and purposes of the military surveys, and will know how to manage his own office without those jealousies and interferences which might otherwise arise in the prosecution of a work now practically divided between the War and the Interior departments. For the law, as enacted, simply consolidates the geological surveys, leaving the coast survey and the surveys for military purposes or public works under their former heads. Mutual good-will and coöperation among these bureaus is therefore highly important; and no one would be so likely to secure it as Mr. KING.

It is rumored that an attempt will be made to defeat his confirmation by the Senate, on the ground that Dr. HAYDEN is "entitled" to the position, by reason of his long and devoted service in the field. As we do not hear it seriously asserted that Dr. HAYDEN could successfully establish a claim on any other ground, we are relieved from any unpleasant necessity of discussing at present the considerations of intrinsic personal fitness. But we must protest against the doctrine of "title," as applied in such cases. Dr. HAYDEN'S industry and perseverance, which have been abundantly rewarded, both in honors and in money, give him no right to a chief executive position, apart from the demonstration that they may or may not furnish as to his superior capacity for the duties of that position. The most zealous advocates of "civil service reform" admit that, in the choice of administrative heads, mere length, amount, and fidelity of service can not be permitted to decide. Commanders-in-chief are not made by regular promotion.

We think we do Dr. HAYDEN no injustice when we say that his course during the last session of Congress, with regard to the consolidation of the surveys, was dictated by the probable effect of that measure on his own fortunes. If it would result in making him Director, he was in favor of it; if not, not.

This is neither very surprising, nor very reprehensible. But, unfortunately, Dr. HAYDEN seems to have been unable to make up his mind which way the cat would jump; and this uncertainty affected his own movements, until, when it was too late for him to change the event, he jumped the wrong way, and threw his influence against the consolidation. If he or his friends (as we hear, but can scarcely believe) are claiming any credit for the passage of the bill, they are presenting a deceptive balance-sheet. They may, indeed, present genuine items on the credit side, since they have operated on both sides; but they ought not to ignore the debit column, which furnishes the latest entries and the larger total.

The credit of saving this measure belongs exclusively to Mr. HEWITT, who rescued it, after Dr. HAYDEN and others thought it was defeated, and by a clever stroke of parliamentary skill, attached it in the House to another appropriation bill, and carried it triumphantly through the subsequent conference committee. The battle was won before the enemy fairly knew that it had been reopened. And estimating as fairly as we can the net result of Dr. HAYDEN'S movements throughout the campaign, we conclude that, on the whole, it was won in spite of him, and that he can not legitimately wear the colors of the victorious party.

We do not urge such considerations as in themselves appropriate to the question of the appointment. On the contrary, we insist that the appointment should turn solely on proved and recognized fitness. It is conceivable that a man who had conscientiously disapproved of a proposed measure might afterward be the best man to conscientiously execute it. His actions in opposing it might throw light on the question of his fitness; and that light should, of course, not be ignored. Moreover, there is a certain presumption that he who does not cordially approve a measure is not the most likely to administer it with enthusiasm and determination. But the fitness is the main thing; and it is on this ground alone that we deem the nomination of Mr. KING the best that could be made, and trust that the Senate will disregard the protests of all disappointed candidates. Of other complaints there are, and will be, none.

*

A NEW PLACER FOR THE SAN FRANCISCO RINGS.

The growing interest in mining investments here in the East is being assiduously cultivated, and preparations are being made to profit by it by the rings which control the Comstock and some other San Francisco companies. The fact is, the rings have almost exhausted the fruitful placers of San Francisco credulity, and find it difficult to collect the assessments necessary to keep up work at the majority of the mines, and from which the profits of the rings, in a great measure, come. The enormous expense of working a Comstock mine (aside from a rare pocket of rich ore) is much greater than the value of the ore produced, and the deficit is made up by inducing the public to bet on the chances of striking one of these rare bonanzas. The ring which controls the management alone knows what the explorations, with diamond drills and otherwise, are finding; and if rich ore is struck, the fact is carefully concealed from outsiders, and perhaps an assessment is made, with the object of depressing the stock, till the ring gets control of the greater part of it; then the public is taken into the confidence of the management, the "bonanza" is exaggerated, and the stock flies up far beyond any value the mine may have. The ring unloads at the top of the market, sells short, and, having the control of the mine, readily brings down the stock by an unfavorable rumor, making by the decline as well as the advance. A similar game is played when the ring wishes to get rid of its interest in a mine preparatory to making an assessment.

Another of the "smart" management games consists in making an unprofitable, assessment mine do the pumping and, to a certain extent, the exploration for a producing mine. In this way the public pays the piper, and the ring does the dancing. Moreover, the ring owns the mills; and whether the mine pays or not, whether the ore is worth milling or not, it must pay a heavy tax to the mills. This, on the Consolidated Virginia, last year, was over $10 a ton.

Cause and effect are not brought into such disagreeable proximity in practice as they are here. The change from dividends to assessments is made more gradual, and is softened and sweetened by many "favorable

indications of a new bonanza," and with many encouraging rumors. The ring does not abruptly force its stock on the market, but simply "parts with a small portion of its interest" to satisfy an urgent public demand for more of the stock. The final result is, however, always the same—the rings get the money and the public gets the worthless, or worse than worthless, stocks. These facts are so transparent to any one who has studied the course of Comstock management that it is surprising how the public could so long have been induced to play with these "gentlemen" who always use loaded dice. For some time past, every thing has been pointing to the conclusion that this rich placer of public credulity in San Francisco has been nearly exhausted, and there are unmistakable indications that the rings are now preparing to exploit the Eastern public in the same way. Here in the East we have too many different industries and classes of investment, and too many capitalists who are beyond the control of any "bonanza ring," to make it ever possible for any clique to get such absolute possession of the sources of credit, and through them of the entire business community, as has been the case in San Francisco, so that, whatever measure of success might attend the efforts of such rings here, they could never so completely control and demoralize the community as they have done in California. Nevertheless, even a small part of that success would be exceedingly injurious to legitimate mining interests here; and we need, therefore, make no apology for repeating some of the advice so often given in the pages of the ENGINEERING AND MINING JOURNAL.

There are so many good mines and so many favorable prospects in this country that there is no occasion for undue haste in investing in the one or the other.

There are so many honest and honorable men in this country that no one need, and no prudent man will, associate himself with or give the control of his property to those whose past transactions have not been upright.

Many properties which in themselves offer all the conditions of success are very bad investments when they bring with them undesirable associates. There is no mine so rich as to make an investment in it safe or desirable while it is controlled and managed by dishonest rings.

There are, of course, many honestly-managed mining enterprises in San Francisco, so we would not have our remarks understood as applying to all; but it is equally beyond question that many of those best known and most freely offered here in the East are wholly unworthy of confidence; and when there is a doubt as to whether a concern is honestly managed or not, it is always best to let it alone.

Nor are the rings confined to the Comstock or to San Francisco. The management of some mines in the Tuscarora District, Nev., has a very unsavory reputation, and the wilds of Arizona and the cañons of Utah can furnish examples to be avoided. Even some Colorado mines have been manipulated in a manner that brings no credit to the State, and injures mining generally. It is becoming more and more evident that the Eastern public is counted on by some of those rings as a promising placer, and unfortunately there are newspapers that are willing to aid any enterprise that pays liberally for their aid. It will be well, therefore, for proposing investors to look carefully both into the actual value of the properties offered and into the character of the parties who offer them for sale or who manage them. A good mine under dishonest management is usually a disastrous investment.

The questions of the relative advantages of assessable and non-assessable stocks, and of the conditions that would tend to prevent abuses in mine management, we shall take up on another occasion.

NEW PUBLICATIONS.

TRANSACTIONS OF THE AMERICAN INSTITUTE OF MINING ENGINEERS. Vol. VI. *May*, 1877, *to February*, 1878. *Published by the Institute, at the Office of the Secretary, Lafayette College, Easton, Pa.* 1879.

The transition from one method of preliminary publication to another, which took place during the period covered by this volume, has caused some delay in its appearance, and some defects in its arrangement. Neither of these drawbacks, however, is at all important; and it is hoped that under the new system, now fully in operation, the volumes containing the revised papers and proceedings will be published more promptly than ever before.

The volume before us fully maintains the high reputation which its predecessors have established for the Institute as the most active and prolific of technical societies. The causes of this extraordinary vigor we have often discussed. They lie partly in the wide range of professions embraced in the membership; partly in the simple and liberal organization of the society; partly in the abundance of facts to be observed and problems to be solved in American mining and metallurgy; partly in the enthusiasm and devotion of leading members of the Institute; partly in the rigid restriction of its proceedings to their legitimate objects, whereby the formation of factions has been prevented; partly in the ambition, intelligence, and cordial good-fellowship of American engineers and metallurgists; and largely in the executive skill, tact, and industry of Prof. DROWN, the Secretary, upon whom the details of management and of publication are necessarily laid. Time has triumphantly demonstrated that the success of the Institute is not at all the result of a mere "spurt," put forth at the beginning, and likely to die out as the novelty of the enterprise wore away. The founders builded better than they knew. The plan which they adopted in the fear lest any thing more elaborate should fail, turns out to be as well suited to their mature prosperity as it was to their modest beginning. While the meetings continue to be socially delightful, and the papers to be practically valuable; while membership continues to be regarded, not as a guaranty of professional standing, but only as a recognition of the desire to learn, and to contribute to the common stock of experience; while the true function of the Institute continues to be recognized as the discussion, not the decision, of problems connected with its sphere; and while its income continues to be devoted exclusively to its current administration and its publications, there seems to be no cloud in any quarter that can threaten its peace and prosperity.

The examination of the volume before us is in the nature of a pleasant retrospect. It begins with the Wilkes-Barre meeting of May, 1877—the first return of the Institute to the place of its birth. In May, 1871, on the call of Messrs. COXE, ROTHWELL, and CORYELL, twenty-two persons assembled at Wilkes-Barre, and organized the Institute. After six years, the same place witnessed the gathering of the representatives of the same society, numbering already 699 members and associates, and recognized in all civilized countries as the exponent of American science and practice in the professions to which it was devoted. No wonder the annual report of the Council on that occasion, recalling the history of those six years, crowned with the experiences of the eventful Centennial year, expressed some distinct (though modestly subdued) exultation!

This volume covers also the Amenia meeting, memorable in many ways. The masterly management of LEWIS, reinforced by the abundant hospitality of New England, and invested with magical fascination by the blended charms of nature and of woman—can the combination be forgotten? The Berkshire hills and the Housatonic valley, with the fair inhabitants thereof to explain (and exemplify) their attractions, LEWIS to be Chairman of the Local Committee—and now and then a charcoal-furnace or a hematite mine, or a limestone-quarry, to serve as a scientific pretext—it is a great deal to say, but we say it boldly, that the Tennessee and Lake G. Horicon have not wholly dispelled the glamour of that memory. One thing we can frankly declare, that while the Chattanooga people and the Ticonderoga and Port Henry people need no help or instruction, LEWIS might have been employed with advantage as expert counsel at Baltimore!

Passing from the social features to glance at the evidences of solid work embodied in this volume, we find it rich in elaborate and important papers. We need only mention BOWIE'S admirable monograph on hydraulic mining; HOLLEY'S communication, from the records of the U. S. Test Board, on the strength of wrought iron as affected by its composition, and by its reduction in rolling; HEINRICH'S thorough papers on the Goderich salt mines, and on the mesozoic formation in Virginia; EGLESTON'S account of Lake Superior copper mining; FRAZIER'S beautiful mathematical discussion of the mechanical work performed in heating the blast; the descriptions by KEYES and BLAKE of the Eureka ore-deposits; FRAZER'S acute essay on the classification of coals; KEITH'S clever papers on magneto-electrical subjects; RANDOLPH'S complete picture of the Clausthal ore-dressing works; BARTLETT'S analysis of the fundamental formulæ of ore-dressing; and SMOCK'S report on New Jersey clays, to demonstrate the abundance, in this collection, of such papers as cost their authors much labor, thought, and research, and are correspondingly valuable to the profession.

Another class of contributions, useful and suggestive, tending, perhaps, still more than these elaborate treatises, to maintain the interest of meetings, may be found represented here. Brief records of experience; compact tabulated statistics; notes on all subjects of professional interest; theories and hypotheses advanced for criticism—each has its use and value, and all are welcome. We need hardly say that the longest papers are not always worth most. But it is not necessary to draw distinctions in such particulars. While the preparation of careful and thorough essays is to be encouraged, we have always held that it is better for the Institute and for the individual member to contribute what is already known than to wait for some indefinite future period when more may be known. At any rate, the result before us in the present, as in the preceding issues of the Institute, is a volume which we believe may fearlessly challenge comparison in technical literature of the kind, as to the proportion of its truly and permanently valuable material. We may say of these papers what the toper said of his beverage: "Some whisky may be better than other whisky; but no whisky is bad!"

We have only to add, in conclusion, that the mechanical appearance of the volume testifies to the taste and accuracy of Dr. DROWN'S editing, and the excellent workmanship of the Institute printer. The defect in arrangement to which we have alluded is the lack of chronological or

other order among the papers. But it is of no practical, with very little sentimental, importance. The thorough analytical index completely makes amends.

CARBONATES.

There is a charm in this word. The mere announcement of the discovery of carbonates of lead is sufficient to create a stampede in Colorado. The impression prevails that this class of ore exists over a large area of country, and now that the miners are familiar with it, it is thought that a great many new discoveries will be made during the summer. In fact, we are informed that some important discoveries in new districts that have been made are being kept as secret as possible.

During the past sixty days, several new discoveries have been reported. The latest is on Alamosa Creek, about twenty-five miles west of Alamosa, the present terminus of the Denver & Rio Grande RR. The accounts published by the Colorado press say that the ore assays from 100 to 300 ounces, while one sample assayed $15.000 per ton. A dispatch from Denver under date of the 11th inst., confirms rich discoveries, but says that the assays are not reliable enough to publish.

PERSONALS.

Our Readers are invited to send us Items for this Column.

A. F. WENDT, M.E., of New York, has returned from a visit to the lead and zinc mines of Missouri, and is about to visit the Georgia gold mines.

Miners are leaving Wilkes-Barre for the West in the hope of bettering themselves. Sixty went about a month ago, another party last week, and a third is preparing.

JOHN C. RANDOLPH, M.E., of New York, who has recently been examining mines in various parts of Colorado, including Leadville, will go to Arizona to examine some mineral property, notably the Moss lode.

At the leading hotels in Denver, 193 names were registered on March 3d. This would make a creditable showing for a much larger city. The registers also show that the persons visiting that city were from all portions of this country and some parts of Europe.

W. S. KEYES, M.E., of San Francisco, recently examined the Leadville (Colo.) mines. Mr. KEYES is considered as the highest authority of the Pacific Coast on lead deposits, and his opinion on the value of any class of mines is considered a safe one "to bet on."

WILLIAM G. BOYLE, M.E., of Arizona, who has recently returned from Europe, is now on his way to New Mexico, to examine property which it is proposed to colonize with Belgians. Mr. BOYLE will visit Leadville, Colo., on his way, and proposes to continue his journey to Arizona via New Mexico, examining several of the rich mineral deposits that are known to exist in that region.

The pipe line from the Pennsylvania oil regions to the sea-board, of which Gen. H. Haupt is engineer, is making good progress. It has already had a tussle with the Northern Central (Pennsylvania Central) RR., near Williamsport, and has got an injunction from the courts restraining the railroad company from interfering with the laying of the pipes under the railroad. The work of laying proceeds as quickly as the contractors can furnish the pipes.

THE BUELL GOLD MINING COMPANY.

The property of this company is located at Central City, Colorado, and consists of 1000 feet on the Leavitt lode, 1200 feet on the Kip lode, 300 feet on the Vasa lode, and 500 feet on the Elliot lode. The Vasa lode, a continuation of the Leavitt, has two shafts, one 265 feet deep and the other 230 feet. From the latter fully 10,000 tons of ore yielding $15 per ton have been taken. From the Leavitt property 58,585 tons of milling ore yielded $594,051.60, or at the rate of $10.14 per ton. The Boston & Colorado Smelting Company purchased 500 tons of ore from this property, for which it paid nearly $60,000, or $115 per ton. The profits of the mines to the owners have been from $150,000 to $200,000.

The surface improvements are said to have cost nearly $100,000, and consist of a 60-stamp mill with six Freiberg pans, an 80 horse-power engine, three tubular and two 5-flue boilers. There is also a 70 horse-power vertical, double-cylinder hoisting-engine capable of raising from 200 to 250 tons of ore per day. The mill, pans, engines, boilers, hoisting-works, repair-shops, blacksmith-shops, and store-rooms are all covered by a fireproof stone building 135 ft. by 80 ft. This enterprise is strongly recommended by Prof. N. P. Hill, of the Boston & Colorado Smelting Works, and A. N. Rogers, Superintendent of the Bobtail Gold Mining Company.

From all we can learn, money that should have been used in doing dead-work in these mines was employed in conducting unprofitable mining operations elsewhere, and these mines, running into poor ore, as all mines may, were stopped, owing to the financial embarrassment of the owners.

The capital stock of the company is $500,000, divided into 100,000 shares of $5 each; 50,000 shares are given for a working capital; 40,000 shares are now being offered by R. H. Rickard, No. 30 Pine street, at $1.25 per share, and 10,000 shares are to be held as a reserve. Those who purchase stock at the present price will become interested on the basis of $62,500 for the mines and all the improvements, which appears to be very reasonable. The gentlemen who have so far identified themselves with the enterprise are experienced in mining and bear very good reputations.

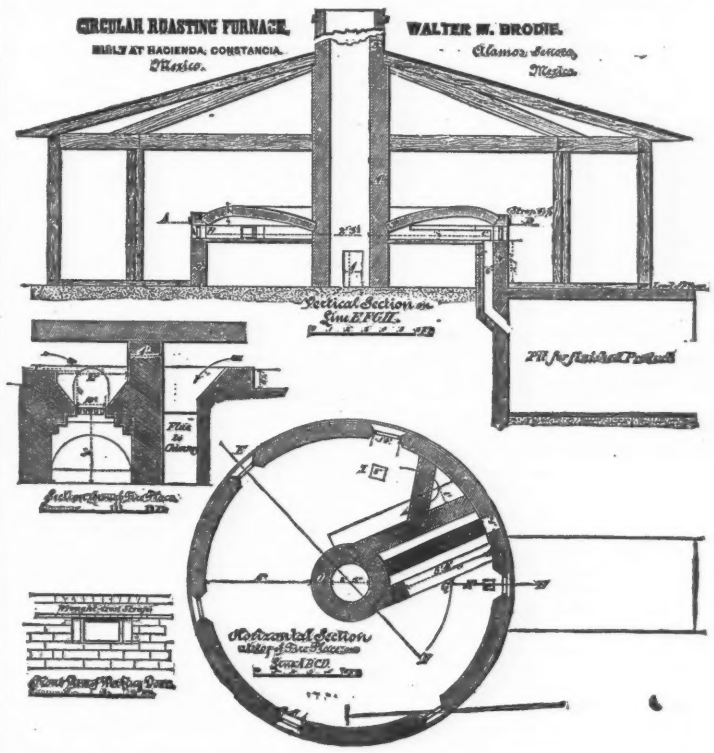
A NEW CIRCULAR ROASTING-FURNACE.

Written for the Engineering and Mining Journal, by Walter M. Brodie.

I send you inclosed the sketch of a circular roasting-furnace, the special construction of which, I believe, is new. If the description of a similar furnace has ever been published, it has escaped my notice and perhaps that of others, who, like us, are situated far from foundries and machine-shops, and can not dispose of the skilled labor and good materials necessary for making a durable erection. The drawing inclosed is that of a small furnace, which was put up for a special purpose at the works of Messrs. Ortes Brothers, near Alamos, and which now has been in continual use for some time, giving satisfactory results.

You will see from the sketch that the furnace is built around the chimney in the form of a ring, and that the products of combustion, after passing the fire-bridge, travel around the circle *G F*, etc., before reaching the flue. In order that the flame may spread over the whole width of the hearth, the springing line of the arch on the outside wall is higher than the one on the inside or chimney-wall. The gases which, under other circumstances, would seek the shortest way to the flue and move along the back-wall, are by this arrangement obliged to keep nearer to the periphery.

The principal advantage of this construction is the strong and simple way in which the furnace can be bound. A simple ring of ordinary flat bar-iron, which encompasses the whole furnace and is placed at such a



height that the bricks forming the skew-back butt up against it, is all that is necessary to bind the furnace in the most effectual manner, as it stays the arch at every point.

Compared with other furnaces of the same length of hearth, this furnace takes up very little space, and in the construction a large amount of material is saved. Not a thread nor a nut is wanted; any village blacksmith, even here in Mexico, can make the ring, which is put in place before the arch is built.

The material to be roasted enters through the roof at *I*, and the finished product is dumped into the pit below at *K*, the same as in the Freiberg roasting-furnace.

Owing to the circular shape, the rabbles have easy access to every part of the hearth, an advantage which, however, gets less if the furnace is made larger.

AN IMPROVED HOISTING PLANT FOR MINES.

Fr. Koepe, of the Hanover coal mine, at Bochum, Germany, is the inventor of an improved hoisting plant for mines, founded upon the happy thought of replacing the two hoisting-drums with their two separate ropes by a single sheave with one wire. The circumference of this sheave, which is much cheaper than the ordinary hoisting-drums, is provided with a wedge-shaped groove lined with wood or leather. The weight of the two hoisting cages above will suffice to prevent slipping. The machine may either be placed directly above the shaft or it may be put up beside it. By the arrangement cited, one half of the length of the rope is saved and any overwinding becomes impossible, because when one cage is at the pit's mouth, the second rests upon the bottom of the shaft, and any further winding would tend to make the rope in the shaft slack, which the counter-weight of the cage rapidly puts an end to. If a rope is attached to the bottoms of the two cages and run over a pulley at the bottom of the shaft, complete counterbalancing of the weight of the rope is effected.

THE motive of science was the extension of man on all sides into nature, until his hands should touch the stars, his eyes see through the earth, his ears understand the language of beast and bird and the sense of the wind; and through his sympathy heaven and earth should talk with him.—*Emerson.*

THE ORIGIN OF METALLURGY—THE BRONZE AGE.*

(*Concluded from page* 162.)

V.

We have just placed before our readers the general conditions of the problem relative to the origin of metallurgy in Europe.

From the facts which have been briefly stated, but which may be found enumerated and more fully described in M. Chantre's great work, and especially after seeing the objects themselves in our museums, they will satisfy themselves that the problem is henceforth well sustained; that the method of proceeding is determined; that the researches of primitive bronze and the scrupulous examinations of the strata in which it is found are the principal if not the only means to arrive at a solution; and that finally the accumulated work of many learned men throughout Europe has already given to science a large and solid foundation. This immense work, which we have condensed in a few pages, was begun about forty years ago, but has been generally known only within the last twenty years.

Europe has not yet exhausted itself; still we feel that the origin of metallurgy must be sought for outside of its frontiers. When warriors will give a little respite to science, the East of Europe and Asia will become the scene of scientific discoveries; in fact, the first appearance of the metals must be sought for in the southeastern portion of Asia. Still, to be certain of the fact, we should, by investigations analogous to those made in Europe for the last twenty years, to a certain extent trace the routes which the industry and commerce of the metals have pursued. These routes, at least with regard to bronze, will converge, no doubt, toward one point. If Central India and Tartary had simultaneously furnished this metal, we should see in all the collections of Europe two different types, and, probably, two different alloys in objects of the same kind; but the converse is true. Except the local differences arising in different ages, the products are the same throughout the West, from Sicily to the northernmost parts of Sweden and Russia. The composition of bronze, obtained from a number of analyses in which the approximation was to a ten-thousandth part, is the same everywhere: the scientific processes are identical. The three successive epochs of the bronze age are everywhere perceived; first, that in which it is seldom found among a people occupied in polishing stone; second, that in which metal has definitively replaced the latter in certain usages when decidedly superior; and lastly, that in which bronze concurs with a new metal, iron, which eventually supplants it. Such a uniformity, at a time when there were no roads and no protection; when the races which inhabited Europe had not yet mingled and experienced their respective wants, and had their own special trades; in fine, the absence of tin in Europe, except in Cornwall, as well as native copper, are sufficient reasons to lead us to believe in the foreign origin of of metallurgy.

To arrive at a starting-point, we might at present proceed by elimination, and show that neither Northern Asia, Caucasia, Tartary, nor Egypt could furnish bronze to ancient Europe. In narrowing the circle, we should be led, as many scientists have been, to look upon Asia Minor as the country through which bronze was carried, and India as the place of its origin. But India itself is large; from Cape Comorin to the Himalayas the distance is about that from Marseilles to St. Petersburg. India does not produce its own bronze—moreover, it imports it. This method, however, which is not very scientific, and which has led many men astray, merits some consideration. Bronze, which is a composition difficult to produce, must have originated in a country where the elements are to be found. India does not produce tin. We should regard the Peninsula of Malacca and Banca, which are even to-day the two great centers for the production of this metal, as the birthplace of bronze. These facts, then, are the result of the system of elimination. We do not mean to say that one would be led into error, but at most would only propound a probable hypothesis. The learned scientists have attempted to solve the problem by reference to texts. Unfortunately, the most ancient texts are of recent date, considering epochs of such antiquity. Moreover, the authors of these texts, whose individuality is a matter of doubt, were not well informed, since none of them had any idea of the three successive ages of humanity. In vain did M. de Rougemont, in 1863, with the aid of texts only, pretend to have solved in his own cabinet the problem for a solution of which scientists have sounded lakes, turned over the sods of the field, and dug into the mountains. This learned man, for whom the book of Genesis was a sufficient authority in metallurgy, designates Phœnicia as the country from whence European bronze was obtained. But there are not mines either of tin or copper in Phœnicia. The nearest copper was to be had in the isle of Cyprus, which, after all, was not Phœnician; besides, the Phœnicians were never producers, but only merchants. It would be impossible to show any Phœnician bronze anterior to iron. We will here add that the emblematical figures of Europe are foreign to Phœnicia, and that the author of the fourth chapter of Genesis had but vague notions regarding the origin of metals. There is, then, no other method to follow but the observation and comparison of facts. If the facts just enumerated prove the foreign and unique origin of bronze industry, the local differences probably fall into three divisions in Europe—the Ural, the Danubian, and the Mediterranean; and these may be subdivided into provinces. In noting the successive epochs indicated by the superposition of the layers of the *palafittes* and stations, we can determine the relative state of this industry in the different provinces of each group with each of the three epochs of the bronze age. The nature of the objects associated in the layers shows the successive phases through which this industry passed. Now, the first bronzes sold in exchange for amber, furs, leather, and other products, to the polishers of stone, were *bijoux* and amulets. We are able, by comparison, to follow the march of the commerce of jewelry from country to country in each province. We next find utensils and arms, and, lastly, appears the era of metal beating, that is, the hammering of bronze, following the simple fusion, and thereby undergoing a complete change.

These three series of observations, founded on the thousand objects in the public and private libraries, have shown that, if the Ural group, which borders on Asia, is set aside, the provinces of the Danubian group received bronze from regions near or below the Danube; while Savoy, France, and a part of Switzerland received theirs from Italy across the Alps. The waters of the Danube spread as far as the lakes of Eastern Switzerland, and it is to this river we are indebted for the bronze objects found in the *palafittes* of Zurich, while those of Savoy were borne by Italian waters. The bronze works of Germany, Denmark, and Sweden, and, to a certain extent, those of England and Ireland, belong to the Danubian industry.

The Italian industry fills the basin of the Rhone, and extended on one side as far as Savoy, on the other to Cevennes, then proceeded to the North of France, its influence being felt as far as Great Britain.

Now, how was this propagation of metallurgy effected? The foundries and treasures answer the question—imperfectly, however. The earliest disclose foreign workmen who established their workshops in open fields, not in populated cities, but in their vicinity. Not having any permanent homes, they wandered from place to place, and would here and there melt old articles and mold new ones, any deficiencies being supplied from ingots or bars of bronze they carried about with them; their treasures much resembling the parcels and bundles of nomadic merchants. How can we account for the appearance of those found at the top of mountains where there are no habitations? But the findings indicate that these unfortunate men did not return, and that they were a prey to violence or misery in other quarters. And why have these very foundries preserved the molds and crucibles, the ingots and broken objects which were to be recast? Why should these workmen have left these articles behind them! Or, rather, have they not been the victims of hatred or cupidity? Herodotus says that there was in his time a sort of corporation or class composed of nomadic founders who came from Asia. During the whole of the middle ages, these strangers, differing from the men of the West, frequented our cities and towns. Their nomadic mode of life, their unknown tongue, their strange customs and religion, which seemed to be paganism, were the cause of their being hated and ridiculed, although their services were much needed. They were murdered without mercy. Modern industry has almost banished them from the most civilized countries; but they overran the East, the Middle, and the North of Europe, without counting the whole of Asia; they come like the men of the bronze foundries, to remain a few days in the fields near the cities. They are known by different names in different countries; *tsiganes* in Hungary, *zingari* in Italy, *bohemians* in France, *gyphtes* or Egyptians in Greece, *gypsies* in England, and *gitanas* in Spain. They are not united together, but are members of a corporation dependent upon a chief. It is from this chief, residing at Pesth, that they receive the metal, and he himself receives it from another who lives at Temesvar; but whence does he obtain it? It is probable that the similarity of the events of the bronze age and the customs of modern pewterers will enable the scientists to discover the course of ancient metallurgy. The route of commerce is not much changed in countries where the inventions of our day have not yet penetrated. The processes were perpetuated. In the East the same tribes furnished men in the same business. Now, it is a fact that the *tsiganes* belong to India. We know from another source that there were no castes in the time of the Veda; but there were then trades, among which that of the founder had an important place. But are these founders of the Aryan race? Did they belong to that part of the conquering nation which, in its march to the Southwest, had not yet reached the Valley of the Ganges, nor gone beyond the Saraswati? It is easily seen that problems arise and multiply, and how necessary it now is to pursue, outside of Pesth (the last place of the anthropological congress), the researches which have been going on in the West for the last quarter of a century.

The point of departure from the Italian current is not any better known. Discoveries have shown that the Rhodanian industry comes from Italy, and that Italy made more progress than the countries farther north; but the working of bronze is not any more original in Italy than it is in France or Savoy. From which side did the founders gain access to Italy? Did they come from Greece or from the islands? And when it shall have been shown that they came from Greece, and that Greece preceded Italy in civilization during the bronze epoch, it will be necessary to show from whence Greece received her bronze? Did she obtain it from Asia Minor, Cyprus, or Egypt, or from some other country? From the moment we disregard the Adriatic, the problem is unsolved, as the countries beyond this sea have not yet been searched. The discoveries made at Santorin by M. Fouqué and the French school, and especially the great researches of Dr. Schliemann, at Troy and at Mycenæ, throw a ray of light on our subject, but do not entirely solve our problem. And this will not be until new discoveries shall be made in many places in the Grecian peninsula, in the islands, and over the far-spreading surface of Asia.

In these countries there will needs be found the commercial equivalent given by the men of the West in exchange for bronze brought by the Eastern men. These objects of barter will be found to consist principally of yellow amber, a precious substance which remains intact in the earth as well as in the sepulchers. The comparative study of religion will furnish to science a helping hand; for we know that the symbolical figures of certain bronzes found in the West belong to the Aryan race and come from central Asia or India. Such are the swastika, the cross, the wheel, the crescent, the disk, the stars, and numbers. These symbols, plainly characterized, will be like so many stakes in all places where they shall be found, and these stakes, marked on the chart of the world, will indicate the metallurgic paths. Philology already gives us a little information; but perhaps we should not depend on it too much; for the names given to the metals by the Aryans of the West do not always have the same signification they do in the East; but, since in India, for instance, the names designating the same metal, the same industrial product, the same figure, are always numerous and significative, they will help us to comparisons, which will complete or clear up those derived from science; and thus will the study of texts, which has been so abused, become useful. Be it it as it may, scientists admit at present that the courses of metallurgy in Europe—those of the Danube, and Italy, and the Rhone—start from the European continent and tend to converge toward a central point of Asia, which has not, however, yet been determined; but they also admit that the epoch when bronze was introduced in Europe among the people of the neolithic period is yet at the state of the geological period, and can not be included in any chronology. Will a real date ever be determined upon, or at least, an approximate one? We doubt it, but at least hope so.

* Translated for *Van Nostrand's Magazine*, from the French of Emile Burnouf, by Christopher Fallon, A.M.

PROGRESS IN SCIENCE AND THE ARTS.

General Science.

Clerac's Tubes.—The *Telegraphic Journal*, just to hand, publishes an interesting correspondence by Clérac and Du Moncel upon the subject of the variable resistance tubes of powdered carbon, which are held to invalidate the claims of Mr. Edison to the discovery of the variability of electric resistance of this and similar materials by differences of pressure. We have referred to this controversy at length in former issues, and need only remark here that, from the evidence presented, the sooner Mr. Edison withdraws his claims to be the inventor of the microphone, the better it will appear for his reputation as a man of science.

Food Adulteration.—The *Scientific American* of March 1st contains a lengthy article on the subject of food adulteration, with especial reference to the position taken by the Social Science Association at a late session, in giving a species of official sanction to a "tissue of sensational assertions with regard to food adulteration in this country." The article in question reproduces liberally the opinions and conclusions of Prof. James F. Babcock, State Assayer of Liquors, etc., for Massachusetts, and will go far toward reassuring those whose minds may have been disquieted as to the falsification of common articles of food and drink, by the sweeping assertions of Mr. Angell, the member who read the paper before the Association, as above noted. We refer our readers to the issue of the journal above given for details.

The fact that Food is a By-product in Australia is noted as a very singular reversal of the conditions of human existence, by one of our English contemporaries. The occasion for this curious but strictly accurate statement was the fact that, "at a recent meeting at Melbourne of a meat-preserving company, the declaration was made that the meat then in course of packing in the tins cost 'a farthing less than nothing per sheep;' or, in other words, the sums realized from the sales of the skins and tallow were more than sufficient to cover the original prime cost of the animals."

The Artificial Propagation of Sponges having been demonstrated by Brehms and Buccich to be possible and easy of accomplishment in the Mediterranean, although, through the ignorant prejudice of the fishing population, their very instructive experiments have as yet yielded no practical results, the *Scientific American* suggests that it might prove a profitable venture for some of our enterprising citizens to undertake the propagation of fine sponges in American waters. The Florida Keys and the Gulf of Mexico are affirmed to be suited for this purpose.

Honors to an American Savant.—At the Annual General Meeting of the Royal Astronomical Society, held on Friday, February 14th, the President, Lord Lindsay, formally announced the presentation of the Gold Medal of the Society to Prof. Asaph Hall, of Washington, D. C., "for his Discovery and Observations of the Satellites of Mars."

Mining, Metallurgy, and Mineralogy.

The Increasing Ascendency of bituminous coal and coke, in the manfacture of pig-iron, over that made with anthracite and charcoal, is the subject of a late interesting article in the *Iron Age*. It appears that up to the year 1855 more iron was made with charcoal than with either anthracite or bituminous coal; but in that year anthracite took the lead and kept it until 1875, when it was exceeded in turn by bituminous fuel and coke, which gained the ascendency that now promises to be kept permanently. The progress of this species of fuel in the iron manufacture is shown by the facts that in 1854 only 8 per cent of the pig-iron production of the country was made with it; in 1864 it had increased to 19 per cent; in 1869, to 21 per cent; in 1875, it had risen to 42 per cent; in 1877, to 46 per cent; and in 1878, it was about 46 per cent of the total production.

The Report of Professor Cook, for 1878, contains some analyses of certain iron ores found near Charlottenburg, N. J., and which from their location and purity, may be found very well suited for Bessemer pig. The *American Manufacturer* gives the following as the percentages of four samples, from which it will appear that the ores in question are rich in iron and low in phosphorus:

	1.	2.	3.	4.
Metallic iron	61·420	61·470	67·420	64·940
Sulphur	0·274	0·360	0·550	0·390
Phosphorus	0·021	0·028	0·014	traces.
Titanic acid	.....	.....	.....	1·000

A New Copper Extraction Process.—The treatment of cupriferous pyrites in the Bessemer converter is suggested by Mr. John Holloway, an English metallurgist. He melts the pyrites in a cupola, transfers it to the converter, where it is blown as in the ordinary process, with a blast of air. The sulphur of the pyrites, which furnishes the fuel in this operation, is oxidized and passes off as sulphurous acid (which is condensed or utilized for making sulphuric acid), while a regulus rich in copper is left behind, which can be profitably treated for the extraction of this metal.

A Simple Method for Producing Metallic Chromium is described by M. Moissan before the French Academy. He shakes up a concentrated solution of chromous chloride in water with sodium amalgam. Several reactions occur, and among them the sodium is eliminated from the amalgam, forming a chloride, while an amalgam of chromium is formed. The amalgam obtained is then boiled in water for an hour or so, to remove all the soda, and then decomposed by heating in a stream of hydrogen gas, kept at 350° C. (662° Fahr.), by which the mercury is volatilized, and the chromium is obtained as a black, slightly-coherent metallic powder. The same method will serve to obtain amalgams of manganese, iron, cobalt, and nickel.

The Rare Minerals Percylite and Schwartzenbergite, according to *Nature*, have been discovered in a new locality in Bolivia, from whence specimens have lately found their way to England.

A Mine of Amianthus of fine quality is reported to have been discovered in the island of Luzon.

A Report to the St. Petersburg Mineralogical Society, by M. Kontkevitch, who has recently explored the iron mines in the provinces of Kherson, Ekaterinoslav, and Taurida, represents that at the confluence of the rivers Säksogon and Ingulda there are no less than 40 layers of iron ore, making deposits of ore from 35 to 200 feet in thickness, and extending for several miles in width.

Chemistry, Physics, and Technology.

As one of the most striking improvements in applied chemistry shown at the late Paris Exhibition, *Dingler's* refers to the process of Vincent and others for working over the molasses residues from the beet-sugar manufacture, which have of late been introduced in France, and by which it has been found profitable to turn to useful account, in producing several valuable products, what was long regarded as a waste product. These molasses residues (after extracting the potash salts) are submitted to dry distillation, in which process gases, tar, and much condensed water are obtained. From the last-named (which alone is useful) there are obtained ammonium sulphate, methyl alcohol, and large quantities of crude tri-methylamine salts. The alcohol is valuable in the manufacture of aniline colors; and the tri-methylamine salts are converted, by a process of Vincent, into methyl chloride, which is similarly used, or, being an extremely volatile liquid, is used in making artificial ice. We condense these interesting data from an abstract in the *Am. Jour. of Pharmacy* for March.

Nobel's Explosive Gelatine, for a description of which our readers are referred to the back files of the JOURNAL, was recently tested at the St. Gothard Tunnel works, and has been reported to possess double the explosive energy of dynamite. It has the additional advantage over the latter, also, of keeping for an indefinite period under water without deterioration.

Chemical Notes from Various Sources.—In connection with the alleged possibility of substituting salts of chrome for those of vanadium in the manufacture of aniline-black, which, as our readers may recall, from our recent notices in these columns, has been seriously disputed, it is remarked incidentally by *The Textile Manufacturer* that the price of the coloring matter could scarcely be affected thereby, because of the exceedingly minute quantity of the vanadium compound required in its present mode of manufacture. One part of the vanadium chloride suffices for 68,000 parts of the aniline salt.—Fischer has succeeded in making the synthesis of rosaniline.—Salzer, in the *Berichte*, warns against the danger of allowing ammonium salts to become mixed with bleaching-powder in store-rooms, etc. He calls attention to the fact that when chloride of lime and sal ammoniac (air-dried) are shaken up together, a spontaneously-inflammable gas is generated.—Levache has examined certain soaps containing petroleum, which have appeared in the French market, and finds that they are made by adding petroleum, after mixture with carnuaba wax (a vegetable product from Central and South America), to the soap-forming materials. Thus combined, neither the petroleum nor the wax separates out from the soap when the latter is subjected to the action of water, but appears to dissolve up completely without emulsing. Levache found that other substances, notably methylic alcohol (fusel-oil) and common alcohol rendered petroleum soluble in soaps.

A New Hydrocarbon was obtained in white pearly scales, fusing at 94° to 95° C. (201·2° to 203° Fahr.) by Kelbe, by heating resin oil (obtained as the high boiling portions of the dry distillation of common resin) with sulphur to 200° C. (392° Fahr.) and over.

To Fix Pencil Drawings upon Paper, the *Papier Zeitung* recommends that a sheet of ordinary drawing-paper be placed upon the surface of an alcoholic solution of white resin, long enough to become thoroughly moistened with it. It is then dried in a current of warm air. When the drawing is finished, it is simply necessary to slightly warm the paper for a few minutes, sufficiently to soften the resin, when the drawing is rendered ineffaceable. Paper thus prepared is said to have a good surface to draw upon. A simpler plan than this is to moisten the back of the paper with a weak solution of white shellac in alcohol.

We may add to this that a similar plan to that first named has been very successfully used to fix acoustic figures, magnetic curves, etc., upon glass; it being only necessary to cover the glass first with a thin film of some transparent and easily-fusible varnish, and, having produced the desired figures, curves, etc., upon the plates thus prepared, to pass a heated iron over their surfaces in such proximity that the varnish will soften, and the particles of iron or sand composing the same become imbedded in the softened stuff. When the plate cools, the figures, etc., are permanently fixed in place.

Engineering, Mechanics, and Miscellaneous.

The Importance of De Lesseps's Contemplated International Congress to discuss the advantages of the several proposed routes for a canal across the American Isthmus, and to decide which is the best, has been recognized by our government, and, according to public report, Admiral Ammen, Commodore Selfridge, Commander Lull, and A. G. Menocal, U. S. Navy, have been selected to represent our government as delegates. The American Geographical Society has also been invited to send delegates, and will probably do so, as will also the National Board of Trade and the Chambers of Commerce of some of our important commercial centers. It is anticipated that, should the proposed conference come to a conclusion as to the most desirable and advantageous route for the much-talked of canal, steps will be taken at once to form a company to begin the work.

The Simplon Tunnel Project, which has been several times urged upon the French government as an important national enterprise to offset the commercial advantages that must accrue to Germany from the control of the traffic of the St. Gothard Tunnel line, is again revived. This time the talk is assuming more of a business look. M. Favre, the contractor for and constructor of the St. Gothard line, is said to be in negotiation with a body of French capitalists who seriously contemplate the undertaking of the work. Its estimated cost is fixed at about $15,000,000, and the length of the tunneling that will be required is 8·68 miles. For the special advantages of this projected route, we must refer our readers to the engineering journals, which have fully discussed its features during the past year or two.

Work upon the Iron Ocean Pier and Breakwater at Long Branch is reported to be rapidly progressing, and it is expected that the entire tructure will be completed in time for the demands of summer traffic.

The object of the improvement in question is to furnish a suitable and safe landing-place for steam vessels and other craft, which up to this time has been lacking, and as its completion will bring this celebrated sea-side resort within a short sail of New York, it is expected to considerably increase its popularity and patronage. The iron pier referred to, according to the *Scientific American*, is built straight into the Atlantic ocean a distance of 660 feet, with a breakwater at its outer end 225 feet long and 50 feet wide, consisting of three lines of iron piling, interlaced with chain work, to break the force of the waves. A sea-wall, to protect the cliff, is already built.

Concerning the Great Department of Public Works of the city of Paris, a body of thirty-six trained engineers, having a tenure of office quite independent of political parties, and who are promoted only in virtue of seniority or exceptional merit, and to whom is intrusted the engineering administration of the great city, we learn that it is sub-divided into six sections: 1. Public streets, public and private lighting, temporary concessions on the public streets, constructions of sewers, etc., ten engineers. 2. Promenades, permanent concessions on public domain, control of carriages, eight engineers. 3. Water supply, sewerage, drainage, etc., thirteen engineers. 4. Municipal railways. 5. Creation of the cemetery of Méry-sur-Oise, two engineers. 6. Parochial road service of the Department of the Seine.

The Opening of the Interior of Africa to British commerce is attracting considerable attention just now in England, where the importance of extending the markets for her manufacturers is keenly understood and appreciated. This subject lately formed the themes of two eminent lecturers, Mr. Hargreaves, at Manchester, and Mr. Bradshaw, at Preston, both of whom appeared to be sanguine that Central Africa promised to become a second British India.

An Extension of Telegraphic Communication from Algeria across the Great Desert to the French possessions in Senegal, is said to be strongly advocated by De Lesseps and others. The French lines already extend from Algeria eastward to Tripoli, while the Egyptian lines reach to the Equator, and it may be confidently expected that the extension of the South African lines northward to meet them will not be very long delayed.

The Secretary of the Iron and Steel Association feels himself warranted, in view of the increasing activity in all branches of the iron trade of the country, the better prices that prevail, and the constantly-growing demand for iron and steel products, in "pointing with pride" to his prediction of August last, that "the long period of depression in the American iron trade had practically ended, and that henceforth it would gradually give way to brighter days and better times."

The Introduction of Gas-Engines has attained to remarkable dimensions in Germany and England (especially), where engines of this class as high as 30 to 50 horse-power have been built. Mr. Robert Grimshaw, reporting upon a recent visit to the Gasmotoren-fabrik, Deutz, notices that a 50 horse-power gas-engine for a beet-sugar factory was in course of construction there. The gas companies, in view of the large consumption, furnish gas at very reduced rates for such engines.

An International Exhibition of milling, baking, and confectionery machinery is announced to be held in Berlin in June next, under the auspices of the German Millers' Association. A grand national exhibition is also to be held in Moscow in 1880, the occasion being the twenty-fifth anniversary of the emperor's accession to the throne.

Spain is to have an International Exhibition in 1880, if report is correct, and the statement is made that work has already been commenced upon the buildings at Madrid.

Intending American Exhibitors will do well to note the fact that the Niobe, iron clipper ship of the Pioneer Line, will sail from Pier 9, East River, New York, for Sydney, N. S. W., with goods for the Australian International Exhibition, which opens in August next, as per our previous references to the event. The Niobe affords the last opportunity for American exhibitors to enter goods in time.

A Scientific Commission has been charged by the Russian government with the duty of inquiring into the practicability of introducing the electric light into the fortifications of Cronstadt, and upon the vessels of the Russian navy.

We condense the following engineering items of interest from *Engineering News:* A bill looking to the construction of a tunnel under the Hudson River, and granting certain privileges to a number of railroad companies interested in the project, has been reported favorably by the Committee on Cities in the New York State Assembly. Capital to the amount of $10,000,000 is affirmed to be ready and waiting for the passage of the bill in question.——The Pilot Commissioners of New York had recently submitted to them for consideration a plan with drawings and estimates for disposing of the street sweepings of that city. The plan was advocated by Mr. Haswell, a well-known civil engineer, who affirmed that it was used in Europe and Australia with satisfaction. It consists briefly in conveying the garbage out to sea and there disposing of it by means of vessels specially constructed for the purpose. The Commissioners are reported to have approved the plan.——The most important railroad now under construction in Europe is affirmed to be the Beira Alta road in Portugal. It will be 125 miles in length, passes through a populous country, and will form the missing link in railroad communication between Lisbon and Paris.——The report that the Brazilian government had passed a bill guaranteeing $2,000,000 toward the construction of the Madeira & Mamore Railroad, and which we referred to in our last week's issue, is confirmed, according to the *News*, by recent telegraphic information received in London. In consequence, doubtless, the surveys are reported to be rapidly going ahead, the engineers having at latest advices mapped and located 70 miles of the total of 200 miles.——Referring to the extensive system of internal improvements contemplated by the Italian government, which was alluded to in a late number of the JOURNAL, we may add the specific fact, on the authority of the *News*, that the government in question has guaranteed the sum of $150,000,000 for the completion of what is known as the Alta Italia Railway.

A Paper Dome for the astronomical observatory of the Rensselaer Polytechnic Institute at Troy, N. Y., has lately been constructed under the supervision of Prof. Greene. The frame-work of the structure is of seasoned pine wood, and this is covered with paper, after the manner employed in making paper boats, which are known to combine lightness with great durability. The total weight of this dome is about 4000 pounds. It is 29 feet in outside diameter, and can be revolved by moderate pressure without the aid of machinery.

A NEW ZEALAND ZEPHYR.—From New Zealand, further particulars are at hand of the recent very destructive gales and floods. Bridges—according to *India and the Colonies*—were swept away, and the atmosphere must have been rather heavy, as "between Timaru and Christchurch the air at times seemed to be laden with planks, sheets of galvanized iron, and rails." In another place the soil was blown away in clouds, and the boards from the timber-yards were lifted up and carried away some hundreds of yards. Several towns were completely flooded. At Amberley, in the height of of the gale, the roof of one of the railway carriages was blown off, and the guard, having stopped the train and rescued the occupants, had to get ropes and other appliances to lash the carriage, the sides of which were bursting out. The violence of the gales was something awful, and the floods exceeded any thing before witnessed in New Zealand.

THE "WORK" REQUIRED IN DECOMPOSING SALT.—There is every probability that the application of electricity to manufacturing chemistry will largely and rapidly extend, and thus give rise to a wider application for steam power. On this subject the *Electrician* says recent researches have given results, which, however instructive, are somewhat startling as regards the quantity of work which must be stored up in certain products of electrolysis before these can be obtained. Thus, in decomposing a ton of common salt in solution, no less than 1,319,000 foot-tons of work are required to be stored up in the chlorine, hydrogen, and sodic hydrate, which are separated. Practically, at least an equal quantity of work is converted into heat in the electrolytic circuit. Now, the sum of these quantities, on the assumption that an expenditure of 2·5 lbs. of coal per hour will give 1 horse-power, represents 6·6 tons of coal, without taking into account the energy converted into heat by friction. More than ten tons of coal would undoubtedly be consumed in the electrolytic production of one ton of caustic soda and its equivalent weight of chlorine. And it may here be observed that only six tons of coal—besides sulphuric acid, etc.—are consumed in the ordinary manufacturing operations for the conversion of common salt to produce 20 cwt. of alkali—60 per cent caustic. It must be confessed that the data in the present case do not appear very encouraging, especially when it is considered that steam power equal to 373 horses would be required to effect in twenty-four hours the decomposition resulting in one ton of caustic soda and its equivalent of chlorine, and more especially when the construction of the decomposing tanks and other apparatus is duly regarded with reference to the question of time. It is not, therefore, advisable at present for an alkali or chlorine manufacturer to adopt the electro-chemical methods for their production, but there are very many localities where the cheap production of chlorine and hydrogen, and alkaline and acid solutions for metallurgical and dyeing purposes respectively, would be of the greatest advantage.

EXPERIMENTS ON THE SOLUBILITY OF ZINC.—The results of a series of experiments made upon the action of water and salt solutions on zinc by Snyders have been given briefly as follows: 1. Zinc decomposes salt solutions, concentrated as well as dilute, without access of air or oxygen. Hydrogen is liberated, and oxide of zinc is formed. 2. The solubility of oxide of zinc in the salt solutions hastens and aids the reaction. 3. Oxide of zinc dissolves in solutions containing but 1 per cent of salt, or even if more dilute. The solubility in different salts is different, being greater in ammonia salts. It seems to be due to the formation of free alkali, inasmuch as it can exist in solution with a double zinc salt at certain temperatures and by certain concentration. Zinc carbonate and hydrate are not soluble in the carbonates. The solubility of zinc oxide increases as the temperature and concentration increase. 4. If the salt solution is saturated with oxide of zinc, the decomposition does not go any further, but the zinc oxide formed subsequently remains undissolved. But few experiments have been made in this direction, and others will, the *Electrician* says, be instituted by the same person. 5. With access of oxygen free from carbonic acid the oxide dissolves more rapidly because the zinc oxidizes at the same time. The salt aids this oxidation, not directly, but by keeping the surface clean. This, too, requires to be substantiated by further experiments. 6. The solvent action is somewhat retarded by the carbonic acid of the air, owing to the formation of some basic carbonate upon the surface of the zinc. 7. The decomposing and solvent action is greatest in the case of the chlorides and with potassium sulphate, weaker with the nitrates of the alkalies and of barium, and for magnesium sulphate. 8. Zinc does not decompose solutions of alkaline, carbonates, or sodium phosphate in the absence of air. With access of air, but little zinc is dissolved by one per cent solutions, because the zinc is protected by the zinc carbonate or phosphate formed by the reaction. In dilute solutions somewhat more zinc oxide is dissolved. 9. The action increases with increase of temperature; at the freezing-point of water, it is very slight. 10. Solutions of ammoniacal salts take up more zinc than the solutions of the salts of the fixed alkalies. The zinc remains bright in these solutions, and nothing separates, even if oxygen or air is permitted to enter. 11. Hard well water does not act upon zinc, even with large percentages of chlorides and sulphates. Soft water dissolves more zinc in proportion as the amount of chlorides, sulphates, and nitrates exceeds that of the carbonates and phosphates. The poisonous nature of zinc salts, even in small doses, renders the above research of more than ordinary practical interest.—*The Engineer.*

HOSTILITIES BETWEEN CHILI AND PERU.—LONDON, March 3.—The *Daily News* says that dispatches received in Paris announce that a Chilian squadron is blockading Mexillones, Antofogasta, and Caracotes. It is reported that a Chilian force has landed and taken possession of the nitrate mines.

The above announcement is regarded of some importance among the trade, but as the stock on hand here is very large, it has not caused any rise in price. The ports seized, though nominally belonging to Bolivia, are really Chilian in all that regards commercial interests. Chili holds all the mines, and the Bolivian government, with no interest at stake, has, in violation of a commercial treaty with Chili, laid an export duty on nitrate. This practically stops exportation, as the

mines could not compete with those of Peru, which has almost a monopoly of the business. The Chilian Consul has dispatches announcing the cessation of exportations. It is thought, by well-informed persons, that the annexation of the mining districts to Chili will be the ultimate result.

THE PERUVIAN NITRATE SHIPMENTS DURING 1878.—We are indebted to the *South Pacific Times* of January 25th, 1879, for the following figures:

"The administration of the Tarapaca nitrate deposits published on the 31st of December, 1878, a detailed statement of the exports effected during the twelve months of the said year, from which we take the following interesting data:

	Quintals.
For government account, nitrate of soda to Europe	3,514,875·58
To the United States	540,579·41
For private account for orders	1,756,067·61
Total nitrate of soda	5,811,522·30
Nitrate of potash for government account	113,668·44
	5,925,191·04

In this connection we note regular shipments of this article made from Chili, and also from Bolivia, its exports of nitrate having increased very greatly of late years. Not less than 12,000 tons per month are shipped from Antofogasta, which port has become a decided favorite with ship-masters.

MONTANA MINING NOTES.

Special Correspondence of the Engineering and Mining Journal.

The clean-up of the Penobscot mine for the last two weeks in January amounted to between $7000 and $8000. Many improvements of a substantial character have been made at this celebrated mine of late, which will no doubt increase the yield largely.

Mr. J. K. Pardee, Superintendent of the Algonquin Company, Phillipsburg, states that the company has just ordered a mill which will arrive and be placed in position during the summer. The mine is in good condition and promises to pay well.

The Centennial Mill, Butte, after a period of some two years of idleness, has started to work again. This mill has been carefully overhauled and many improvements added. It is running now on five stamps, but five more have been ordered, and, as soon as they arrive from the East, they will be placed in position.

The smelting enterprise of R. K. Williams, Butte, although a failure in the first effort, has been undertaken again. He has obtained a better grade of fire-brick, and it is expected this time it will be a success.

Sixty stamps are now running the entire 24 hours of each day in Butte. This does not include the Alice or Burlington mills. They require about 60 tons of ore each day.

The Northwestern Company, Phillipsburg, has been in trouble lately. The company was owing the workmen a large sum of money for back wages, and one morning they refused to allow the "retort" to leave the building until they were paid, although they continued work as usual. Representatives of the company, creditors, and workmen got together and adopted the following plan to help them out of their difficulty: Six trustees were appointed—two from the company, two from the creditors, and two from the workmen—who have full control, and are operating the company now. They hope soon to be able to place it firmly on its feet again.

TUBEROSE.

PETROLEUM NOTES.

COMPARATIVE SYNOPSIS OF REPORTS FOR DECEMBER AND JANUARY, 1879 AND 1878.

42 GALLONS = 1 BARREL.	1879. Dec. 31 days.	1879. Jan. 31 days.	1878. Dec. 31 days.	1878. Jan. 31 days.
	Bbls.	Bbls.	Bbls.	Bbls.
Stock at wells	308,417	233,405	127,536	144,942
Production for the month	1,318,678	1,346,671	1,256,058	1,203,296
Daily average production	42,538	43,441	40,518	38,816
Iron tank stock	4,306,882	5,064,567	3,001,301	3,410,400
Total stock in the region	4,615,299	5,297,772	3,127,837	3,555,342
Shipments out of the region	992,668	663,988	600,019	775,797
Number of producing wells	10,337	10,482	8,458	8,616
" " drilling wells	218	265	426	334
" " " completed	165	136	382	247
Average daily production of new wells in bbls	2,170	2,099	4,895	2,892

—*Stowell's Petroleum Reporter.*

OPERATIONS IN THE BRADFORD DISTRICT AND VICINITY.—The Bradford *Era* gives the following summary of operations in the Bradford regions and adjacent counties:

	March 1st, 1879. Wells drilling.	Rigs up.
McKean and Cattaraugus County	280	215
Lower country	58	19
Totals	338	234
	February 1st. Wells drilling.	Rigs up.
McKean and Cattaraugus County	193	198
Lower country	37	48
Totals	230	216
Increase in February	108	18

Among the wells being drilled is one which has been located by spiritualists. According to the *Era:* "The 'spirits' are putting down a well near Russelburg, Warren County, on the Allen farm, and are confident of finding oil. Some Poughkeepsie parties are furnishing funds for the spirits to operate on. They have orders to drill to a depth of 2000 feet if the fluid is not found before."

A new process is reported to have been invented in Sarnia, Canada, by which petroleum can be refined without the agency of heat. A sample manufactured from American petroleum at 45 gravity is stated to be a very brilliant and white oil of 48 gravity and 122 fire-test. The yield from the crude was 93 per cent. But the most extraordinary claim for this process is not merely that the means used are entirely mechanical, but also that there is no production of gasoline or benzine, and the entire product is standard white illuminating oil, far superior to the oil refined under old methods.

THE MARKET AT PETROLIA, ONTARIO.—The *Advertiser* of the 8th inst. reports the following: "A brisk local demand is still kept up, and the Canadian trade generally is fairly well sustained. Last week's shipments of refined from London reached over 2000 barrels, all of which went to Canadian cities and towns. Some small dealers have speculated largely, and will probably realize a good profit if the new tariff is favorable and they succeed in selling promptly. Quotations are as under:

Refined oil, car-load lots	13½c. per wine gal.
" small "	15c. " "
28 gravity oleine oil	15c. " "
Crude	$1.70 per bbl.

The total shipments of oil, in barrels, from Petrolia, Ont., in this year up to date, are as follows: Crude, 52,658; distilled, 910; refined, 6916.

Recent accounts state that great excitement exists in the Mecca oil region, in the northwest part of Trumbull County, Ohio, on account of the discovery of lubricating oils in quantities many times greater than any thing previously found. Two Pennsylvania operators began pumping oil on Murdock farm, Mecca Township, one evening. By 6 o'clock the next morning they had pumped 170 barrels, or at the rate of over 300 barrels daily. The oil is found at a depth of sixty-three feet, and is said to be of superior quality.

The Oil City *Derrick* publishes the following statistics, giving the comparison of the operations of the Pennsylvania oil fields for 1878, with the previous year:

Wells drilled in Pennsylvania oil fields during 1877	3,954
Wells drilled in 1878	2,989
A reduction in 1878 of	965
Total number of dry holes, 1877	657
Dry holes in 1878	327
A reduction in 1878 of	330
Total wells drilling in Pennsylvania oil field December 31st, 1877	423
Wells drilling December 31st, 1878	241
A decrease of	182
Total rigs up and building in Pennsylvania oil field December 31st, 1877	323
Rigs up and building December 31st, 1878	245
A decrease of	78

	Barrels.
Average daily production, as shown by the pipe-line runs for 1877	35,000
Average daily production for 1878	41,249
Average daily shipments from the regions, as shown by the pipe-line reports, in 1877	31,163
Daily shipments in 1878	37,671
Total stock in the custody of the different pipe-line companies December 31st, 1877	2,857,098
Stock December 31st, 1878	4,307,590
Total sales and re-sales at the Oil City Oil Exchange in 1878	91,740,000
Daily average a little more than	300,000
Average price of united certificates at the Oil City Exchange in 1878	$1.17½
Total value at average price	107,794,000
Daily average business	353,425
Brokerage, at $6.25	637.702
Highest price of the year, February 4th, 1878	1.87½
Lowest price of the year, September 27th, 1878	78¾

The following is a comparative statement of the shipments of oil by the pipe-lines—official—during each month in the years 1875, 1876, 1877, and 1878:

	1875.	1876.	1877.	1878.
January	441,778	659,267	746,530	778,435
February	361,000	504,996	445,925	783,941
March	714,205	523,521	912,603	771,969
April	786,423	570,198	845,345	897,121
May	633,474	596,997	1,222,015	966,283
June	692,920	850,236	1,295,657	1,116,573
July	883,303	1,162,738	1,085,394	1,242,892
August	881,921	1,128,220	1,409,908	1,689,319
September	1,108,199	1,075,872	1,577,350	1,452,921
October	866,731	505,907	1,194,263	1,758,230
November	645,386	835,476	1,189,492	1,273,826
December	855,536	1,170,521	565,162	1,016,580
Total	8,830,896	9,653,949	12,469,634	13,750,090

The same paper observes, with reference to warning the Legislature against the impending evils of the petroleum tax:

"The oil regions are suffering from low prices for its product, the greatest depression in business, and general hard times. Operators have been obliged to discharge workmen, and practice the greatest economy to eke out a livelihood. Many of them who have been carefully tiding over their affairs, ever hoping that a better day was coming just ahead, are rendered desperate by the continued dullness. Many persons out of employment have been waiting months and months for the expected improvement which shall give them work. This has been going on for over a year, and with matters growing worse and worse."

BUSINESS OF THE STANDARD OIL COMPANY.—The Standard Oil Company, which controls about nineteen twentieths of the refining capacity of Pittsburg, reports its receipts of crude and shipments of refined at that place in 1878 as follows:

	Gallons.	Barrels.	P. c. of total.
Receipts of crude	89,621,528	2,133,846	100.0
Shipments:			
To Philadelphia	34,546,925	822,546	49.0
To Baltimore	23,562,050	561,001	33.4
To New York	8,613,500	205,083	12.2
Local	3,800,000	90,476	5.4
Total	70,522,475	1,679,106	100.0

On the 1st inst. the Pennsylvania Transportation Company, with its pipe line from the northern region, passes into the hands of the United Pipe Lines. The manager claims that the New York refiners did not keep up sufficient business for the line to pay. Instead of daily runs up to 1500 barrels, the highest average was 900 barrels.

A YEAR'S OPERATIONS IN PETROLEUM.—During the year 1878 the business transacted at the Oil City (Pa.) Oil Exchange aggregated 76,450,000 barrels. The average price was $1.17½ per barrel, which would make the value of the total transactions $89,450,000.

THE TIDE-WATER PIPE COMPANY.—WILLIAMSPORT, PA., March 11.—The Tide-Water Pipe Company, which is now laying pipe from the Bradford oil regions to this place, applied for a preliminary injunction to restrain the Elmira & Williamsport Railroad from interfering with the laying of pipe in the bed of a stream running under a bridge of the railroad company. The injunction was granted to-day. The pipe had already been laid, but was torn out by the railroad company.

Petroleum has been discovered near Yreka, California.

PROSPECTS OF PETROLEUM SUPPLIES FROM PERU, S.A.—It is proposed to build a pipo-line from the refinery on the estate of the late Henry Meiggs, Peru, South America, to the shipping port, a distance of about seven miles. It is stated that oil can be produced at this point for less than one cent a gallon, and, as the fields have produced from time immemorial, there is no prospect of their early exhaustion.

NEW PIPE LINE ON THE READING RAILROAD.—A new oil-pipe line is projected from Frisbee, in the Bradford region, to Williamsport, on the line of the Reading Railroad—a distance of 104 miles. It is to be six inches in diameter, with a capacity of from 8000 to 12,000 barrels per day. Only three pumping stations will be required to force the oil to the summit of the Alleghany ridge, in Potter County, from which point it will flow to Williamsport by gravity. The entire

cost will be $600,000. The work is to be commenced at once. Two hundred oil cars are now in course of construction for this service at the works of the Reading Iron Company. President Gowen, of the Reading Railroad, said, in relation to the matter, that the oil for New York will pass over the Lehigh & Susquehanna and the New Jersey Central Railroads. The oil for Philadelphia will come direct to Philadelphia by the Reading Railroad and the Catawissa Railroad.

THE CHINESE BEGINNING TO PRODUCE THEIR OWN PETROLEUM.—The engineers who were engaged in the fall of 1877 to visit China and test territory in the island of Formosa, where indications of petroleum had been discovered, have returned. On their departure they took with them two complete well rigs and all machinery necessary. They reached Tai-wan-foo, in the island of Formosa, on the 4th of November. From there they traveled 100 miles in a sedan chair to the oil country. The journey occupied eleven days. Their machinery was carried by a fleet of Chinese junks to Oulan, a point thirteen miles from where the wells were to be sunk. From Oulan they had to drag the machinery up a shallow river on a raft. Thirteen buffaloes and thirty coolies were required to haul the load. The Chinese government furnished an escort of 100 imperial troops, a special detailed body-guard of eleven of the Emperor's body guard, 150 coolies, five mandarins, three clerks, a paymaster, and two masters of the coolies. The coolies were treated the same as the buffaloes while at work, being urged with the whip and goad as the animals were. The transportation of the machinery up the river occupied two days.

The rigs were set up at once on their arrival. A well 400 feet deep was sunk. A large vein of salt water was struck at a depth of 350 feet. Oil was found at 400 feet. The well could be drilled no deeper. The drill passed through nothing but soapstone the entire distance. The well yielded five barrels of oil a day. It is of very light gravity, the color of amber, and can be used as it comes from the well, without refining.

THE MARKET AT NEW YORK.—The *Shipping and Commercial List* of the 12th inst. says of the market:

Crude.—The demand continues light, and quotations are still to a great extent nominal at 8⅛@8⅝ cents; sales, 6000 bbls.

Refined.—The market remains quiet. Bidding is slow, but refiners are not offering with any freedom. We note sales of about 17,000 bbls., all at 9 cents, the market closing quiet and nominal at 9 here, and in Philadelphia and Baltimore. Case oil is quoted at 11¼@11¾, with sales of 60,000 cases.

Naphtha is quoted at 7⅞ cents, but we learn of no transactions.

Residuum remains quiet and nominally unchanged; quoted at 5½@5¾ cents. 3500 bbls. have changed hands within the range.

Certificates.—The movement on 'Change has continued moderate, business for the three days comprising 110,000 bbls. United within the range of 85 @90⅝c. regular. Oil City quiet at 86¾c. bid; Titusville weak, 87½ bid; Parker's quiet and weak feeling, 87½.

LONDON, March 7.—Refined steady, 7⅝d., buyers; March and April steady, 7⅛d., buyers.

ANTWERP, March 7.—Refined dull, 22f.

EXPORTS OF REFINED, CRUDE, AND NAPHTHA.

	1879. Gallons.	1878. Gallons.
Since our last	784,946	.....
Previously since January 1st	26,031,576	25,084,976
From other ports	10,689,137	8,346,418
Total	37,505,659	33,431,394

The figures which we present to our readers in this month's report offer no good reason to hope for better prices in the near future. Taking the average daily production, the average stock in the region, and the average market price for the product for the years running from 1870 to 1878 inclusive, it will be seen (by the table in another part of this number) that both the average production and the average stocks for 1878 are considerably larger than in any of the previous years, while the average price is less for the year 1878 than for any of the preceding years, except 1874. At present there is a strong probability that the stocks will be increased, as the activity in the region is greatly on the increase, showing 352 rigs building in January against 246 in December. This is especially true of the Upper District, when 320 rigs are up and building against 215 in the previous months.

Meanwhile the Legislature of the State threaten a tax on new rigs of $500, and also a tax of 5 cents per barrel on oil in stock now on hand, and hereafter produced.

In our opinion, so far as the tax on new wells is concerned, while it may, and probably will, somewhat restrict enterprises in drilling within the State, it will more than overcome such restrictions by stimulating new drilling just over the line of the State and in other outside regions.

The larger capacity is daily being increased to provide for the growing stocks, and money seems to be more easily acquired than formerly for carrying on the enlarged business. These premises lead us to believe that, notwithstanding the great activity, and increase in production, while prices can not materially advance, they will not greatly decline.—*Stowell's Petroleum Reporter.*

GENERAL MINING NEWS.

ARIZONA.

THE PLANET COPPER MINE.

The Yuma *Sentinel* says: "Rumors are current that work is to be resumed upon this mine, located in the northern part of this county. The Planet was worked on large scale during the years 1863-64. At that time it was examined and reported upon by a number of experts, who pronounced it one of the remarkable mines of the country. The sudden drop in price of copper, which bankrupted the great firm of Meader, Lolor & Co., and closed the Copperopolis and other famous mines in California, also temporarily paralyzed operations at Planet. It was afterward found that its ores, chiefly red oxides and brown silicates of copper, were peculiarly adapted to the manufacture of bluestone. Mining was again resumed, and continued until four or five years ago. By that time the business of refining bullion had assumed such proportions at San Francisco that the refineries were able to supply the bluestone factories with cement-copper at lower rates than ores could be delivered for from the Colorado River. Mining at Planet was again suspended. We believe the mine has a great future, and are glad to note signs that its merits are again receiving attention."

THE TIGER MINE.

Work on this mine has been prosecuted with vigor. The hoisting-works are finished and in successful operation, and the mill will be running by the middle of May. Considerable delay has been caused by snow and ice and the steep roads over which it has had to be hauled. A new shaft has been opened, which is to be sunk 1200 feet; it is now down 70 feet. There are over five hundred tons of fine ore on the dump. The company has spent already $120,000 on the mine and machinery, and will spend $100,000 more. The ore is very rich in sulphurets and free silver, and said to work very easily.

THE CASTLE DOME DISTRICT.

The same authority observes: "Castle Dome is now one of the thriftiest mining camps in Arizona. Galena is being taken out in large quantities from several of the mines; though only 24 tons a week are hauled down to the river, owing to lack of teams. The Railroad and Pocahontas are now well opened, and, with the Norma and Arkansaw, are turning out plenty of ore. The William Penn is being opened at some depth, showing fine metal. The Flora Temple has some 20 tons on dump ready for shipment. Castle Dome has done much for Yuma County during the past ten years. No man has worked there without receiving his wages, and many families have been supported from the proceeds of its mines. Castle Dome has flourished all these past years, during some of which other camps of the territory have been under a cloud."

Considerable mining for placer gold has been done this winter by Mexicans around the Ellen Gowan, Spruce, and Hemlock mines, in Montezuma District, near Castle Dome. These are copper mines, but they carry considerable free coarse gold, which is washed out of their *débris.*

THE CHERRY CREEK MINING DISTRICT.

From the Prescott *Enterprise* of the 1st inst., we glean the following:

"Thirty miles north of Prescott, and in one of the finest forests of pine and cedar, are located several very valuable mines, and easy of access, as they are almost immediately on the road through Cherry Creek Cañon to the Verde. The ledges generally are of good size, and carry ore which assays from $50 to $150 to the ton. The ore is quite free milling, and can be extracted from almost any of the many lodes in the district, hauled to a mill and reduced at a figure not to exceed $10 per ton, and we believe satisfactory arrangements could be made with the owners of these claims."

THE MAYNARD DISTRICT.

The mines in this district, located in Mohave County, have been taking out and shipping ore, packed on jacks, mules, or horses, for a distance of from eight to ten miles, and then hauled on wagons twenty-five miles to get it to a mill. The American Flag mine is located in this district. This mine was purchased by four Cornish miners, about a year ago, for the sum of $25,000, they paying for it by installments. They have paid all but the last installment, which can easily be paid out of the ores on the dump. This mine shows large bodies of ore, that go from $200 to $1000 per ton. In the development of this mine, richer bodies of ore have been found. In the Mariposa mine a shaft has been sunk to the depth of 120 feet, developing very rich ore. The Antelope mine has a shaft down 100 feet, and shows ore of a very high grade. The vein is about eighteen inches in width, and will yield from $300 to $500 per ton.

Some San Francisco capitalists have a mine called the Flagstaff, situated some five miles from this district, which shows a large body of rich ore.

THE COPPER MINES OF ARIZONA.

The copper mines of Arizona are rich and extensive, and with the advent of the railway their worth will be appreciated, and capital invested in them will pay large dividends. These mines are found in every part of the territory, and wherever they have been worked their richness has been made manifest. At Clifton the mines have been worked for some time and made to pay well, although the ores are hauled hundreds of miles to the railway. In this county and in Mohave County are many copper mines which show well and pay as large dividends as the richest of our gold and silver-bearing veins. We venture here to predict that, before many years have passed, Arizona will be the great copper-producing section of the United States.

PIMA COUNTY.

Great activity prevails in the different districts of Pima County. The railroad is bringing a great many people to that part of the territory, and it is but natural that the mines lying adjacent to this great highway should first receive attention. The steady stream of immigration now flowing into Southern Arizona will soon find its way to the northern counties. Yavapai and Mohave counties, with their wonderfully rich mines, their delightful climate, and their abundance of wood and water, need have no fear for the future.

THE LYNX CREEK PLACER MINES.

A number of miners are at work on Lynx Creek, in the vicinity of Bigelow Flat, taking out placer gold in quantities which is paying very well. Taking the whole county, there are 250 placer miners steadily at work and making fair wages.

THE SILVER DISTRICT.

The Silver District excitement continues, and is daily increased by new developments and an increasing population. The yield of ore shipments has already attracted the attention of mining men at San Francisco, several of whom have gone to look at the mines. Hoffman, promoter of the Tip Top Mining Company has gone to look at the Nellie Kenyon, with a view to effecting a purchase. Morgan has gone after the Black Rock and Pacific, and Col. Tozer says he has bought an interest in the Rover and others. Hammond's shipment from the Red Cloud sampled 315 ounces silver per ton and nearly fifty-six per cent lead. Previous reports of the immense quantity of ore above ground are confirmed. There is great demand for transportation, for conveying ores from mines to steamboat landing—4½ miles. A tunnel into the Rover mine is turning out some very rich ore. Other mines are equaling expectation, and the ore shipments from Silver District will soon be very heavy. This has passed conjecture. The ore is now being broken for sacking and hauling.

COLORADO.

The Silver Cliff *Miner* of March 7th says:

"As we go to press, we learn that more carbonates have been discovered in the Chicago Boy, at the depth of twelve feet, which assay 40 oz., 60 per cent lead. This mine is located 1500 feet southwest of the well-known Hermann shaft, in which ore assaying 327 oz. has been found."

Ten-Mile shows no abatement of interest. The population is steadily increasing, although the snow, at last accounts, was from four to six feet deep. It is expected that there will be 200 houses erected by the 1st of April. The town has five saloons, a bank, assay office, hotel, grocery, two feed stables, and two dance-houses. Other business houses will soon be in operation. This camp will probably show up pretty well from a mineral point by the 1st of May.

Carl Wulsten says: "The Humboldt mine, having been worked down to 600 feet depth, was to be shut down, as the vein became barren at from 400 feet downward. At this depth a cross-cut was driven eastward through the foot-wall and the pay vein was found again, thus demonstrating a fault in the vein. This find having been made in rich ore, carrying pyrites of iron, heavy-spar, and gray copper, settles the permanency of this great fissure vein, and becomes an epoch in the mining history of Rosita and the silver region of the Sierra Majada."

The Ute mine, of Silverton, has struck a four-and-a-half or five-foot vein which is supposed to be very rich.

The Ouray *Times* says that the shaft of the Union mine, which is about three miles from Ouray, is down 120 ft., and has a pay streak two and a half feet thick, showing a quantity of brittle silver, and mills 250 ounces and 1½ ounces of gold to the ton.

From various sources we condense the following relative to Leadville: It is reported that Ex-Governor Routt has made a large strike in the Morning Star mine. J. W. Younger has been offered $60,000 for the Deer Lodge mine on Fryer Hill. About 200 men are at work on the new wagon road between Georgetown and Leadville. It is expected that it will be ready for travel in less than 30 days. Most of the machinery for the new hoisting-works of the Little Chief, Winnemuc, and Little Pittsburg mines has arrived, and is being erected. On March 2d, Leadville was made "a city of the second class." An election of officers will take place on April 1st. Lumber costs from $35 to $110 per thousand feet. Early this month hay sold at $120 per ton. At that time two new smelters and two sawmills had arrived, and there were three smelters between Leadville and Colorado Springs. The demand for teams far exceeds the supply: Laundresses

charge from $2 to $2.50 per dozen for washing, and every piece counts as a separate article. No wonder "biled shirts" are unpopular. The Denver & South Park Railroad Company has established a freight station at Webster, which reduces the distance to be hauled by wagon 35 miles, or from 100 to 65 miles, and practically doubles the capacity of the teams. There is not a Chinaman in Leadville. Eighteen who lately arrived in Denver *en route* to Leadville will probably change their course, as it would not probably be a pleasant place for them.

The Ouray *Times* says: "The owners of the Yankee Boy mine on Mt. Sneffles, in running a cross-cut to tap the lead, have cut the York State at a depth of 80 feet, exposing a pay-streak of twenty inches, carrying ruby silver. They have set a force of men running levels from the cross-cut on the York State, the output being about four tons per day, milling six hundred ounces. They are still pushing the main tunnel toward the Yankee Boy, which they expect to cut in about sixty days, at a depth of one hundred and seventy-five feet."

The La Plata *Miner* says the Inter-Ocean Company has made arrangements for putting up works between Eureka and Howardsville that will cost nearly $100,000. It also says that it is reported that Edward Innis, Cook Brothers, and others will erect extensive works at the mouth of Boulder, two miles from Silverton. The San Juan Bullion Company, it is said, will put up works in the neighborhood of Animas Forks capable of treating fifty tons of ore per day. The Mellville Mining Company expect to start their works on Mineral Creek early in the season.

The Collins *Courier* says: "The town is full of rumors concerning a rich strike that is claimed to have been recently made near the dam, five miles above Barnes's dam, on the South fork of the Poudre, about forty-five miles from Collins. Mr. Charles Pennock, who has been getting out ties up in that region this winter, came down on the 21st inst. with specimens of ore which he found there in great abundance. Professor Board, of Golden, made an assay of these specimens, and his report and certificate gives 594 ounces of gold and 800 ounces of silver to the ton."

According to Mr. Carl Wulsten, the carbonate ores in the Hermann are improving. In the King of the Valley he says: "Carbonates are found at ninety-eight feet depth, thus showing that my assertions are again right, to wit: 'That lead carbonates are underlying the horn-silver-bearing cap-rock of the dike.' More carbonates! In about thirty days I will prove my assertions by further discoveries which I am about making." Carbonate claims are held at the smallest sums and up to $100,000. A discovery north of Round Mountain is said to show carbonates running 500 ounces of silver to the ton. The St. Matthew's has been bonded for $25,000. A correspondent of the Denver *Tribune*, writing from Silver Cliff under date of March 2d, says that first-class ore was struck in the Rambler Lode, near Grape Creek, last week. The Thames River, Song Bird, Hermann, Gray Eagle, Champion, Umpire, and others are increasing in value as depth is attained, and thus far there is no indication of their being exhausted, and, from present indications, the lodes will prove as rich and inexhaustible as those of Leadville.

The "carbonates" discovered near Mt. Washington upon being assayed showed "no silver."

DECISION OF THE LEADVILLE LAND TITLE CASE IN FAVOR OF STARR.

WASHINGTON, March 5.—The Secretary of the Interior has decided the case of Thomas Kemp *vs.* Thomas Starr, involving 160 acres of land, which embraces a considerable portion of the ground upon which Leadville, Colo., is situated. The department holds that the land is mineral land within the meaning of the statute, and if Starr has complied with the mining laws he is entitled to a patent.

THE EL MORO COKE WORKS.

The Denver *Tribune* says of these works, which are undoubtedly destined to play an important part in the metallurgy of the Colorado ores in the near future:

"The El Moro Coke and Coal Co. has now completed and in running order seventy ovens, and will have thirty more ready to fire up in a couple of months. This company manufactures about fifteen thousand tons of coke per month, which is principally shipped to Denver, Golden, and Pueblo, and is all consumed in Colorado. Upward of a year ago the company commenced shipping to Utah, but has lost that trade owing to the impurities of its coke. The article manufactured at Connellsville, Pa., and shipped to the West, contains 15 per cent of ashes or gross matter, while the El Moro product contains from 16 to 18 per cent. This the company was determined to overcome if possible. To experiment with its coal, a short time since, it sent a car-load to Pennsylvania to be crushed and washed previous to coking. The experiment was a success, the article produced was superior to that made from the Pennsylvania coal. This determined the company on the necessity of machinery for crushing and cleansing, and it immediately sent for and employed Professor Stuts, an eminent engineer, and a gentleman of much experience in the coking business in Pennsylvania. He is now on the ground, and will soon have the works in operation. He assumes that he can make a finer coke from the El Moro and Trinidad coal than is now made in America."

The Slip Up mine, half a mile above the Yorkville House, on the Rosita road, shows 120 ounces of silver to the ton, at a depth of seven feet. The ore is pronounced a carbonate by the assayer.

DAKOTA.

THE BLACK HILLS.

We take the following from the Black Hills *Herald:*

"A seven-days' clean-up of 200 tons of ore from the Great Eastern mine gave a result of about $2500, equal to $12 per ton.

"While excavating for a well at the Deadwood jail recently, a pay-streak was reached that prospected twenty-three cents to the pan.

"Some rich ore has been struck in the Wallace or De Smet extension, near Deadwood.

"The overshadowing influence and prestige of the Homestake, De Smet, and Golden Terra mines too often detracts attention from other valuable property. For instance, the Pierce mine, only three hundred feet southeast of the Homestake, and undoubtedly a portion of the 'big rim,' has for months been quietly developed, and soon will commence milling ore from the large amount now on the dump. A sixty-foot tunnel has been run in on the main vein, uncovering a fine body of good milling ore.

"The Yankton *Press* has gained a few particulars of the gold excitement in the vicinity of Sioux Falls. The discovery is located in Lake County, six miles west of Lake Herman, and fifty miles northwest of Sioux Falls. The rock in which the gold exists is a white quartz, similar to the quartz of California. The quartz crops out from the side of a gulch between two small lakes, which has at some time been the channel of drainage from the higher ground near by. It seems improbable that the gold-bearing quartz can exist in any quantity in the prairie formation of this region, and the most reasonable supposition is that it is a huge piece of drift which has been brought hither by glacial force over a long distance. Great excitement exists at Sioux Falls, and a stampede for the gold fields has already been inaugurated."

NEW DISCOVERIES IN THE BIG HORN REGION.

The Cheyenne *Sun* notes the departure, on the 3d inst., of a well-equipped prospecting party from that city, for some rich diggings hidden away in the mysterious fastnesses of the Big Horn Mountains. The expedition will go up to the Big Horn or Yellowstone region, where the discoveries are located. The ore brought down assayed very high in silver and gold. It is the intention of the parties to reach the new diggings as early as possible, and, after laying out claims and forming a mining district, invite immigration.

The Homestake mine has sixty-five men drifting the large ore channel both ways with a view of opening up stoping ground to keep the 80-stamp mill running, which takes about 120 tons every twenty-four hours. The diamond drill makes a hole from 10 to 20 feet deep, the blast of which will dislodge from 30 to 40 tons of milling ore, worth from $7 to $15 per ton.

A recent strike is reported by the *Pioneer*, called the Blue Lode, located on Big Rapid, and near the town of Sheridan. The mine was one of the first quartz discoveries made in the Hills, having been found by members of Jenny's party in '75. It is a copper-silver-gold lode, 30 feet in width, and now at the depth of 95 feet shows 27 per cent copper, $1800 gold, and $500 per ton silver.

A large quantity of rich pay dirt has been taken out in Rockerville Gulch the last few months, ready for the spring water. It is thought that at least $15,000 worth of this dirt is now awaiting the spring thaw.

The owners of the Anchor mine, in Strawberry Gulch, have ordered a sixty-stamp mill, embracing all the later improvements.

This property is being opened magnificently, and is producing splendid ore and in great quantity.

The Pennsylvania, adjoining, is showing up well, and, as the two are one and the same vein, it is hard to tell which will become the chief. Both are in bonanzas of rich pay.

The Boss Tweed, the Oro Fino, the Keystone, and the Surprise are in the neighborhood, and the owners are actively developing them.

The *Black Hills Miner*, of Rockville, says: "Rich diggings have been discovered on Mamituka Hill, about a mile below Hayward. The ground has been prospected by a shaft, which is now down 19 feet, about 9 feet of which is through pay dirt, and no bed-rock yet. The prospects are very even, and vary but a few cents to the pan, the average of which is from 12 to 15 cents. Within a day after the discovery, the claims were all taken up on the hill. It is the intention of the flume company to extend its flume to these claims should the present prospects hold out.

"The Glamood mine, in the Rochford District, is now attracting a good deal of attention, and is equal if it does not surpass most of the older mines in the uniform richness of its quartz. The ore is talc slate, mixed with quartz. It is rumored that the Montana mine is sold for $60,000."

GEORGIA.

The Dahlonega *Signal* of the 1st inst. says: "We have little to report this week from the mines. The Pigeon Roost mill, on the Barlow property, is nearing completion. The mills at the Findley are running again with fair result. A dispatch from this mine, dated March 10th, says that 71½ ounces of gold, valued at $1478, were produced during the first week in March. The product of this mine, during a run of 13 days, averaged about $175 per day. The Hand and Benning are both doing well. The Cincinnati and Ogle are making good headway. Considerable activity at the Franklin mine is reported. The automatic tramway for carrying ore from the mine to the mill has been completed, and is 2000 feet in length. New mills will be built on other property in the early spring."

MICHIGAN.

THE QUINCY COPPER MINING COMPANY—ANNUAL REPORT.

We are in receipt of the annual report of this company, covering its operations during the year 1878, from which we extract the following. The President says:

"The shipment of the season was 3,554,210 pound of mineral, which has been smelted and yielded about 84 18-100 per cent, or 2,991,950 pounds of refined copper.

"The product for the past year has been 3,408,925 pounds, or 1704 925-2000 tons, which has realized, estimating copper on hand in New York at 15 cents, and at the mine at 13 cents per pound $447,510.50

"The expenditures for the year are as follows:

Expenses at mine	$341,115.43	
Other expenses	60,733.74	
		401,849.17
Leaving a mining profit		45,661.33
Add received from interest, etc		9,679.05
Giving as net result of the year's business		$55,340.38

A dividend of $1 per share, or $40,000, payable February 10th, has been declared.

"As already reported by circulars to the stockholders, the charter under which the company has operated expired by limitation March 30th, 1878, and a new company, with the same corporate name, has been organized under the general mining law of Michigan, with a capital, fully paid, of $1,000,000, divided into 40,000 shares of $25 each, to which all the rights, franchises, and property have been transferred.

"Attention is called to the important developments made in the north and south ends of the mine, from which the larger part of the last year's product has been obtained. These openings continue to promise well for the future, and warrant the belief that the production of the present year will be a full average."

The company's agent presents a very full and satisfactory statement, covering the mining operations and developments made during the year, from which we condense as under:

"The appearance of the mine is indicative of favorable results for the coming season.

"The diamond drill has been kept actively employed, its principal work being confined to a thorough *exploitation* of the 240, 250, and 260 fathom levels. No extensive mineral deposits were discovered, but much valuable information has been obtained, and by no other means could so many explorations have been made at so small a cost.

"The man engine is now in successful operation to the 240 fathom level.

"The decrease in expense of rock stamped is very gratifying, and is chiefly to be attributed to the extensive alterations and repairs made in stamp-mill two years ago, and from which we are now realizing the full benefit. It is also pleasing to know that, while the efficiency of the mill has been so greatly increased, as shown by the large amount of rock stamped and the high percentage of mineral smelted, the loss of copper in the waste sands continues very small, the average assays for the year being only one hundred and eighty-five one thousandths of one per cent. Will stop the mill in March for the usual repairs to shafts, cams, batteries, etc.

"I now foresee no necessity for any heavy extraordinary expenditure during the coming year."

SILVER AND GOLD IN THE LAKE SUPERIOR IRON ORES.

The Escanaba *Iron Port* is responsible for the following:

"West from the port of Escanaba about 37 miles, in the Menominee Iron Range, is situated the Emmett iron mine, which was opened last season. The ore is a rich hematite of all shades of color, from a bright yellow, which is as soft as yellow ocher, to a hard dark blue, which last is the best ore taken out, and yields about 64 per cent of metallic iron. The first shipment of the Emmett mine ore from this port was made early in June last, and since that time ten or fifteen thousand tons have been mined and sold. The deposit of ore lies under from 2 to 8 feet of earth and gravel. Its depth, length, or width is not yet known, and it is to be worked as one large open pit. Some time ago, the proprietors became convinced that there were other minerals mixed with the iron, and had experimented on it a little themselves, but without obtaining any satisfactory results. Analysis of the ore had been made by different experts, but in each case a large percentage of residue was left without ascertaining what its constituents were. Three samples of the ore, one of yellow, one of brown, and one of blue, were sent to Chicago to the works of the Chicago Refining Company, with the following

results, which we take from the certificates signed by the assayer, A. B. Thomas. The assays are calculated for net ton—2000 lbs. :

YELLOW ORE.

Gold, 3-10 of an ounce, value	$6.19
Silver, 9 ounces, value	12.77
Total	$18.96

HARD BROWN ORE.

Gold, 2-10 of an ounce, value	$4.12
Silver, 12 6-10 of an ounce, value	16.25
Total	$20.37

BLUE ORE.

Gold, 9-20 of an ounce, value	$9.35
Silver, 12 9-20 of an ounce, value	19 93
Total	$29.28

"Of course, it has not yet been ascertained what it will cost to extract these precious metals from the ore on a large scale ; but should the expense not be too great the company have a bonanza, as the supply of ore is apparently very large. They will pursue their investigations as fast as possible, and we hope before long to lay the future results before our readers. At present the excitement throughout the region is great."

MONTANA.

The *Independent* of February 13th says :

"Yesterday evening some specimens of ore were brought into town from the Black Hawk lode, an extension of the famous Penobscot. The owners have been working for some months looking for the lode, and have found it at last. The ore is rich, and resembles that found in the Penobscot. Mr. Vestal and Capt. Frue have no doubts that it is an extension of the famous lode."

UTAH.

A correspondent writing from Silver Reef, under date of the 21st of February, says:

"The first two claims of any note on the White Reef are the McMullen and the McKelvie. But little work has been done on the former, while the latter has a sixty-five-foot incline, showing a four-foot ledge.

"The Thompson mine has two separate veins, the lower one cropping in the face of the east side of the reef, about four feet between walls, assaying about $30 per ton. The upper vein crops out on the west side, about 40 feet below the apex of the reef. This vein has been worked by chloriders along the length of the claim, in places to a depth of 30 feet. The ledge shows well, six feet thick in places, assaying about $40.

"Considerable chloridi g has been done on the McNally mine, the ledge showing the same as the Thompson.

"The Leeds Company's mines consist of the Maynard and Leeds locations. A tunnel is started north on the ledge 400 feet, and is about 218 feet from the ore-house. Going north, we find a wedge-shaped block of waste, which pinches out the vein for a distance of about sixty feet, where the vein again appears, showing a width of eight to ten feet. Here the ground that had been stoped was filled with second-class ore; this is to be worked now, there being over 1000 tons of it piled in the stopes. Further north another fault occurs, this time splitting the vein. On top of this horse, the vein was about seven feet thick; below, the seam was only two feet.

"About 248 feet north of the Bonanza shaft, a shaft is down seventy-two feet in the hanging country.

"The Leeds mill is of ten stamps, but at the time of my visit only five stamps were running. There are ten pans and five settlers and each stamp crushes from five to eight tons of ore every twenty-four hours. During the year 1878 this mill crushed 12,064 tons, which produced 152 bars of bullion valued at $235,766.10.

"The cost per ton for mining is divided as follows :

For extracting	$4.38
For prospecting and dead work	2 07
For sundries	04
Total cost per ton	$7.04

"The cost for milling per ton is as under :

Labor	$2.20
Materials	3.15
Hauling	32
Assay office	7
Total	$5.74

"The average cost of mining and milling for the year has been $12.78 per ton. This cost is larger than it has been for some months past, or since the two additional pans commenced running.

"During the past six months the average cost of mining has been $6.10 per ton, and the average cost of milling $5.05, making a total of $11.15 per ton. The average fineness in silver of the 152 bars shipped last year is 835."

Our correspondent writes us as follows : "The Old Telegraph mine in Bingham has made a new strike, and is now shipping from 100 to 120 tons of ore daily. The smelting works on the Jordan belonging to the Telegraph are running to their full capacity."

Six quartz mills are reported to be in course of erection at Silver Reef, Utah.

Rich silver ore is said to have been discovered at a place two miles east of Mud Springs, Iron County, Utah, and about ten miles northwest from Rush Lake toward Shauntic.

Arrangements have been made by which the ore from the Hidden Treasure mine, Dry Cañon, is to be disposed of in Salt Lake City. The main incline on this mine is down 1600 feet.

VIRGINIA.

REORGANIZATION OF THE OLD LIBERTY MINE.

The *American Exchange* of the 12th inst. notes the recent incorporation of the Thornton Mining Company, of New York :

"The capital stock of the company is $750,000 and consists of 7500 shares ; par value, $100 per share. The company owns the Old Liberty gold mine, situated in Fauquier County, Va., which consists of four parallel veins, each of which is nearly a mile in length, being an extension of the same veins which cross the Randolph Mining Company's property. The Old Liberty mines were worked forty-two years ago, and more or less since that time until within a year or two prior to the late civil war. The first quartz mill erected on the property was burned. A second mill was immediately built to replace it, which has a record of $200 to $1200 per day in gold, even with the crude machinery in use during the early days of mining. The old mill still stands in part as an evidence of the wealth found in the mines at that time. There is no stock of the company for sale. Two shifts of men are now working night and day on two of the veins, and a third shift will be put at work next week.

"The following list of directors certainly affords sufficient grounds for the belief that the property will be energetically developed and honestly managed : Messrs. Alexander Taylor and Alexander Taylor, Jr., prominent bankers of this city ; Governor Phelps, of the District of Columbia; Mr. Henry W. Ford, President of the National Bank of the Republic, of this city; Mr. Frederick Butterfield, Mr. Richard Fellows, and Mr. J. C. Hoyt, all of this city."

NEW PATENTS.

The following is a list of the new inventions relating to Iron, Coal, Mining Machinery, Chemical Apparatus, and the treating of Precious Metals, etc., from *The Official Gazette of the United States Patent Office*, for the weeks ending February 18th and 25th, 1879 :

For the Week Ending February 18th.

No. of Patent.	*Title of Invention.*	*Name of Inventor.*	*Residence.*
212,300	Weighing-Scales	Georges L. C Coulon	Paris, France.
212,317	Hoisting-Bucket	Frederick H. C. Mey	Buffalo, N. Y.
212,330	Ore-Concentrator	Edward W. Stephens	Erie, Pa.
212,338	Friction-Brake and Clutch for Hoisting Drum	Thomas A. Weston (a)	Stamford, Conn.
212,356	Fluid Motor	Joseph Chase	Worcester, Mass.
212,358	Traction-Engine	John Cooper	Mount Vernon, O.
212,364	Platform-Scale	Franklin Fairbanks (b)	St. Johnsbury, Vt.
212,373	Speaking-Telephone Apparatus	Elisha Gray	Chicago, Ill.
212,405	Leveling Devices for Surveying Instruments	George N. Saegmuller	Washington, D. C.
212,426	Machine for Measuring and Cutting Wire	Gustavus A. Baron	Gouverneur, N. Y.
212,438	Injector for Steam-Boilers	George R. Buckman (c)	Philadelphia, Pa.
212,500	Hydraulic Motor	William S. Puckett	Sumterville, Ala.
212,508	Furnace for Roasting Ores	Charles E. Robinson	Brooklyn, N. Y.

RE-ISSUE.

8,585	Duplex Pumping-Engine	George F. Blake	Boston, Mass.

For Week Ending February 25th.

212,536	Valve for Hydraulic Engines, etc	George Johnson	Cincinnati, O.
212,590	Injector	John Cain (d)	Sandy Lake, Pa.
212,591	Hydraulic Engine	Robert J. Cartmel	Santa Rosa, Cal.
212,596	Manufacture of Muriate of Ammonia	William Gentles	St. Helen's, England.
212,598	Rock-Drill	George M. Githens	Brooklyn, N. Y.
212,607	Steam-Boiler and Pipe Covering	George Kelly	Chicago, Ill.
212,620	Inspirator	William R. Park (e)	Boston, Mass.
212,622	Rotary Engine	Roman Pickens	St. Alban's, W. Va.
212,627	Instrument for Drawing Arcs of Circles	Theodore Scheffler	Paterson, N. J.
212,644	Process and Apparatus for Amalgamating Ores	Charles E. Ball	Philadelphia, Pa.
212,648	Salt-Drying Apparatus	Leon Bemelmans	Kanawha Court-House, W. Va.
212,649	Process and Apparatus for Washing Common Salt	Leon Bemelmans	Kanawha Court-House, W. Va.
212,686	Artificial Stone	Joseph A. Greer	Sterling, Ill.
212,726	Explosive Compound	Wesley Miller	Cambridge, N. Y.
212,728	Rotary Dynamometer	François J. Morin	Paris, France.
212,734	Testing Machine	Tinius Olsen	Philadelphia, Pa.
212,777	Double-Acting Pump	John G. Wolf	New York, N. Y.

(a) Assignor to the Yale Lock Manufacturing Co., same place.
(b) " " E. & T. Fairbanks & Co., same place.
(c) " " William Sellers, same place.
(d) " " one third his right to Isabel Eberman.
(e) " " the Hancock Inspirator Co., same place.

The board, consisting of Gen. Paine, Commissioner of Patents ; Edward Clark, Architect of the Capitol, and Col. Thomas L. Casey, of the Engineer Corps, designated by the act of Congress of the 3d inst. to supervise the expenditure of the appropriation of $250,000 for the fire-proof reconstruction of the Patent Office Building, organized on the 12th inst., and took charge of the plans submitted by the Secretary of the Interior to Congress, and approved by that body.

PROPOSALS.

For the benefit of many of our readers, we compile weekly such proposals and solicitations for contracts, etc., as may be of interest. The table indicates the character of proposals wanted, the full name and address of parties soliciting, and the latest date at which they will be received :

Marking and Rating Stamps ; D. M. Key, Postmaster-General, Washington, D. C.	March 18, 1879
Bricks, Lumber, Iron Beams and Girders, Granite, Marble, Sandstone, etc., required during the present year for Public Buildi gs, Penn Square ; Samuel C. Perkins, President Board of Commissioners, Philadelphia, Pa.	" 19, "
Dredging at Erie Harbor, Pa. ; John M. Wilson, Major of Engineers, Erie, Pa.	" 20, "
Locks and Keys for Mail-Bags ; D. M. Key, Postmaster-General, Washington, D. C.	" " "
Dry Goods, Groceries, Leather, etc.; Department of Public Charities and Correction, New York	" 21, "
Coal for Schools of Youngstown Board of Education, Youngstown, O.	" 29, "
Books and Blanks for Board of Assessors ; Commissioner of City Works, Brooklyn, N. Y.	April 9, "
Coal for Public Buildings ; Western District Commissioner of City Works, Brooklyn	" " "
Coal for Public Buildings ; Eastern District Commissioner of City Works, Brooklyn	" " "
Wagon Transportation ; Rufus Saxton, Deputy Q.M. General, U.S.A., Fort Leavenworth, Kan.	" 15, "
Railroad Grading ; P. Bremond, President of the Houston, East & West Texas Railway, Houston, Tex.	
Railroad Grading ; 75 miles ; P. Bremond, President of the Houston, East & West Texas Railway, Houston, Tex	
Foreign Contract.—To lay and work up a submarine cable, between Luzon (Philippine Islands) and the coast of China ; Ministerio de Ultramar, Madrid, Spain	

Engineer T. L. Patterson, with a corps of fourteen assistants, has commenced the survey for the proposed Cumberland & George's Creek Railroad, to run from Lonaconing to Cumberland *via* Pompey Smash. The survey will probably occupy about three months.

At a meeting of the Philadelphia Council's Sub-Committee on Finance, at the Water Department on the 13th inst. the Chief Engineer of the Water Department was instructed to expend $20,000 for new boilers for the Spring Garden works, and 25,000 for new boilers for the works at Belmont, after which the further consideration of the advisability of purchasing a new pumping-engine for the Spring Garden works was postponed until the next meeting.

ASSAY DEPARTMENT OF THE ENGINEERING AND MINING JOURNAL.

This department is opened for the benefit of miners, prospectors, and others interested in minerals.

Replies will be made in these columns, and *without charge*, to questions asked regarding the nature and commercial value of minerals, and of samples sent.

Assays determining the actual composition and value of ores will be made at the following rates. All assays are made with the utmost care by the most experienced and competent assayers :

Assay for Gold	$2.00	Assay for Copper	$2.00	Assay for zinc	$3.00
" Silver	1.50	" Lead	1.50	Zinc analyses	5.00
" Gold and silver	2.00				

The amount should invariably accompany the order, and expressage or postage must always be prepaid.

Communications, samples, etc., to be addressed to

ENGINEERING AND MINING JOURNAL, 27 Park Place, New York.
(P.O. Box 4404.)

STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative statement for the week ending March 8th and years from January 1st:

TONS OF 2240 LBS.	1879.		1878.	
	Week.	Year.	Week.	Year.
Wyoming Region.				
D. & H. Canal Co..	58,454	475,374	27,353	477,489
D. L. & W. RR. Co.	62,075	552,704	21,749	363,424
Penn. Coal Co.....	19,323	174,836	504	88,223
L. V. RR. Co.....	22,909	144,933	20,250	148,498
P. & N. Y. RR. Co..	.....	4,770	1,797	3,535
C. RR. of N. J.....	35,689	257,475	5,847	135,252
	198,450	1,610,092	77,500	1,216,421
Lehigh Region.				
L. V. RR. Co.....	66,387	382,270	48,151	354,649
C. RR. of N. J.....	39,957	311,573	10,115	145,587
S. H. & W. B. RR..	.....	4,390	.....	3,329
	106,344	698,233	58,266	503,565
Schuylkill Region.				
P. & R. RR. Co	113,840	994,279	125,395	512,050
Shamokin & Lykens Val....	17,049	82,135	10,572	70,271
	130,934	1,076,414	135,967	582,321
Sullivan Region.				
Sul. & Erie RR. Co.	681	10,394	1,028	6,662
Total	436,409	3,395,082	272,761	2,308,969
Increase.....	120,302	1,086,113	.....	.....
Decrease	.....	.....	.....	.....

The above table does not include the amount of coal consumed and sold at the mines, which is about five per cent of the whole production.

Receipts and shipments of coal at Chicago Ill., for the week ending March 8th, and year from January 1st:

	Week. Tons.	Year. Tons.
Receipts.....	34,361	330,217
Shipments.....	9,786	81,859

Belvidere Delaware Railroad Report for week ending March 8th:

	Week.	Year. 1879.	Year 1878.
Coal for shipment at Coal Port (Trenton)	.....	.....	170
Coal for shipment at South Amboy	12,930	56,858	109,719
Coal for distribution.....	8,079	59,743	30,729
Coal for Company's use	3,483	18,538	16,017

The increase of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania railroads, amounts to 41,948 tons, as compared with the corresponding period in 1878.

Perth Amboy Business:	Tons.
Received for the week	21,333
Shipped for the week....	14,616
On hand March 8th	116,936

The Production of Bituminous Coal for the week ending March 8th was as follows:

Tons of 2000 lbs., unless otherwise designated.

	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
Tons of 2240 lb	22,805	159,109
Barclay Region, Pa.		
Barclay R. R., tons of 2,240 lbs.....	10,288	106,616
Broad Top Region, Pa.		
Huntingdon and Broad Top R. R.....	2,020	23,597
*East Broad Top.....	1,118	8,130
Clearfield Region, Pa.		
*Snow Shoe....	458	463
*Tyrone and Clearfield.....	27,953	154,525
Allegheny Region, Pa.		
*Pennsylvania R. R	3,260	20,499
Pittsburg Region, Pa.		
*West Penn R. R.....	4,743	26,823
*Southwest Penn. R. R.....	701	4,343
* Penn & Westmoreland gas coal, Pa. R. R.....	19,263	93,302
*Pennsylvania R. R.....	8,299	53,773

*For the week ending Feb. 14th.

The Production of Coke for the week ending Feb. 14th:

Tons of 2000 lbs.	Week	Year.
West Penn R. R....	2,527	12,972
Southwest Penn. R. R.....	18,915	122,963
Penn. & Westmoreland Region, Pa. R. R.	1,036	10,161
Pittsburg, Penn. R. R.....	3,444	21,648
Penn. R R. (Allegheny Region).....	1,085	7,025
Total...	27,007	174,769

COAL TRADE REVIEW.

NEW YORK, Friday Evening, March 14, 1879.

Anthracite.

The announcement last week that the Delaware & Hudson Canal Co. would sell 50,000 tons of coal at auction had a demoralizing effect upon the trade, but still there was a fair amount of business done until Wednesday, when the sale took place, and the following quantities were disposed of and average prices received:

Tons.		
5,000	Steamer	$2.17½
12,000	Broken	2.35
15,000	Egg.....	2.26
18,000	Stove	2.65
50,000	Average	$2.39

These prices are but 4c. higher than the lowest average of any sale that ever took place in this market, and as about four fifths of the coal was taken by houses that usually figure in bolstering the market, there is a suspicion that this sale was bolstered, although those who purchased should find no difficulty in placing the coal. The effect has been, however, to very much unsettle business, and the sales since have been smaller, while buyers are looking for lower prices. As some of the companies, who should have an interest in securing good prices, are the worst bears in the market, there is no knowing how low prices may be forced. To buyers, however, we may say that even the present prices must force some of the companies into bankruptcy if continued, and it is perfectly safe to lay in stocks, even though bottom may not have been reached.

There is not the faintest indication of a combination, or even an arrangement to limit production. The chances for any thing of the sort are being steadily reduced, as it is rumored that at least two of the companies are now making season contracts, which was not known to be the case a few weeks ago.

Although there was apparently an effort to bring about a strike, or, as it was called, a suspension of mining, and although many producers hoped it might be accomplished, yet nothing appears to have come from it. On the 11th inst. there assembled at Harrisburg, representatives of the miners of all of the counties producing anthracite coal, and Hugh McGarvey, the President of the old M. and L. B. A. was chosen President of the meeting. The meeting was not in favor of recommending a general strike. The following preamble and resolution were finally adopted:

"*Whereas*, Inasmuch as the individual coal operators of the anthracite coal region manifest a strong desire to force a suspension of operations throughout the whole region, and as they have failed to send delegates to the meeting with full authority to act for them; therefore

"*Resolved*, That, until the entire interests of the anthracite coal trade are fully represented at a joint meeting, including operators and miners, no further action will be taken looking to a restriction of the output of coal in the several regions."

An address to the miners was adopted. It says:

"The present condition of the coal trade, which indicates utter ruin to all concerned, suggests to miners and laborers a remedy in the form of organized combination of operators and working men. The individual coal companies, who are anxious to render their assistance to restore the trade to a paying basis, failed to coöperate with us in any systematic method looking to immediate relief. It is apparent that the great corporations have obtained absolute sway over those employed by them, and thus prevent their coöperation with us at this time. Therefore, we suggest, as the only remedy, a thorough and complete organization of the miners and laborers throughout the entire region."

The Philadelphia *Ledger's* report of the meeting says:

"Mr. Hugh McGarvey, of Carbon County, and President of the M. and L. B. A., spoke at length upon the importance of organization. In the course of his remarks he said: 'When I issued the call for this meeting two months ago, I had in view a reorganization of the Miners' and Laborers' Benevolent Association, and an amalgamation of all the labor unions in the coal region, whose interests are identical as workers of coal. I was sustained in doing so by many of our most active and earnest men, who, as well as I, labored then and since under the conviction that at this meeting we would take such steps as would give immediate relief to the coal trade and protection to the miners and laborers of the anthracite region at least. My present view of the situation just now is, that while we are in a position as an organized body, or a body of organizations, to make an effective call for an almost general suspension of anthracite mining, to take place immediately, and to last at least long enough to warrant a better condition of affairs upon resumption; yet in view of the fact to be regretted that the Wyoming and Scranton regions are not officially represented, as well as the fact that the operators who, we believe, desire that something should be done, are not present, we had better allow the market to stand, at least for the present, to be attended to by the operators who have heretofore claimed that as their particular right, and give our attention to the question of wages, and complete and perfect organization for that purpose as soon as possible. If we are not ready to begin a suspension on a question of wages, the only thing that remains for us to do is to organize for that purpose, and hereafter keep organized in the face of all opposition, no matter the source from whence it springs.'"

The production of anthracite coal last week was 436,409 tons, as against 393,063 tons the previous week, and 272,761 tons the corresponding week of 1878. The total production from January 1st to March 8th was 3,395,082 tons, as compared with 2,308,969 tons for the like period of last year, showing an increase this year of 1,086,113 tons.

Bituminous.

Outside of a contract by Messrs. Harned, Ogle & Co. to deliver 10,000 tons of Clearfield coal to Eastern iron works, we learn of no important business. There is no indication that there will be any concession made to the Cumberland shippers, while it is supposed, from the low prices at which Clearfield coal is being offered in the East, that the Pennsylvania Railroad has made a reduction in its toll charges. The Cumberland trade is taking a very gloomy view of the situation, and well it may, if it is true that the Pennsylvania Railroad has made a concession; for with the push that the shippers in that region have, they will assuredly secure a large amount of business.

Philadelphia. March 13, 1879.

Trade here is very dull. The dealers have no margin of profit in competing with the retail prices of the companies supplying this market, and are expecting decline in tolls and prices. Freights are high, and buyers are also waiting for lower rates, so that in spite of bare markets and the last auction sale, indicating that prices have reached bottom, there is still dullness where activity would reign if the impression that lower rates can be obtained by waiting was removed. The attempt to regulate the trade by a strike or suspension enforced by the men, has fortunately proved a miserable fizzle. The operators who resort to this atrocious way of regulating the business dare not show themselves and the men are beginning to be unwilling to be pulling the chestnuts out of the fire for them. There has been too much of this in the past. Let us hope it will never occur again. For a number of years every possible way which can be invented to regulate the coal trade has been tried with the exception of the only right one, and every attempt has been a failure. It has encouraged an overproductive capacity which is the curse of the trade, and it can only be equalized by prices encouraging consumption and discouraging developments of new mines, until both meet, when there will be a fair remuneration for all. The rate of freight of $1.75 to Boston, which is the limit of many orders, has not yet been reached except for very large vessels.

Pittsburg. March 13, 1879.

COAL.—In many of the collieries on the Monongahela, the miners have returned to work at 2½ cents a bushel, the price against which the strike was organized. There is no doubt but all the others will follow suit, so that the strike may be considered at an end. Several weeks have been spent in this unavailing effort to coerce employers to pay higher for work than its product would justify—to resist an inevitable consequence of business depression and general low prices. In taking this course, their loss has been very considerable, and can not be recovered. In conforming to the general condition of things, and counting their pay in the commodities it would buy, all this would have been saved and much suffering and anxiety avoided. Their nominal wages seemed less, though the commodities commanded by them were about the same as hitherto when higher pay was given. But this was overlooked, and much time, which is money, has been wasted. The rivers are in high flood, but no coal is ready for shipment. A general return of workmen to the mines will very soon change this condition; for, with full forces, 600,000 bushels, or 23,000 tons, can be produced per day. Abundance of empty barges and boats are on hand ready for receiving their cargoes, so that there is no danger of short supplies with those looking this way for coal. It is probable that this result of the strike was so manifest that the dealers in the lower markets felt no anxiety about consequences and moved forward in the even tenor of their way, maintaining unchanged prices. We quote as heretofore:

PRICES AT PITTSBURG.

Wholesale, on board.....	4	cts. per bushel,	$1.06 per ton
Retail, delivered	5½	" "	1.46 "

AT CINCINNATI.

Wholesale, on board.....	6	cts. per bushel,	$1.59 per ton
Retail, delivered.....	7½	" "	1.99 "

AT LOUISVILLE.

Wholesale, on board.....	6	cts. per bushel,	$1.59 per ton
Retail, delivered..... ..	7½	" "	1.99 "

AT NEW ORLEANS.

Wholesale, on board.....25	cts. per barrel,	$2.42 per ton
Retail, delivered.....40	" "	3.87 "

Bushels are rated among dealers here at 76 lbs.—26½ bushels make a ton, nearly.

The barrel that rules the coal measurement in New Orleans contains 2 4-7 bushels of 80 lbs. each, making about 200 lbs. Nine and two thirds of these barrels weigh a ton, within a small fraction.

COKE.—The strike of the miners in the Monongahela collieries had no effect upon those working in the vein whence coal is obtained for the manufacture of the Connellsville coke. This coal is of a peculiar character, so soft and friable that it is easily mined with picks, without gunpowder. This enables a miner to turn out three or four times as much in a day as he can in other coal mines. The pay in this peculiar stratum is but ¾ of a cent per bushel, with which the workmen are satisfied. During the week all the ovens have been in operation, and the production is fully up to the past. Since the hard times set in, in 1873, there has been some falling off in consumption along the Shenango Valley and elsewhere west of Pittsburg, which has been more than made up, principally eastward. No business so large has more evenly maintained its magnitude and stability. It has now submitted to low prices, and will doubtless recover in profitableness, with the restoration of brisk times. We quote as heretofore—$1.15 to $1.30 per ton of 2000 lbs. on board cars at the ovens.—*American Manufacturer.*

Our correspondent at Sandusky, O., under date of March 10th, 1879, says:

"The present warm weather is causing the ice to rapidly disappear in our bay, and we look for a speedy opening of navigation at this port. There are good prospects of a brisk trade here the coming season. The stocks of coal are all cleaned out, and the market has for some time received its supply by rail. Winter prices are still maintained as follows: Anthracite on cars at Sandusky: Grate, $5.05; Egg, $5.15; Stove, $5.40; Chestnut, $4.90; Massillon Lump, $2.70; Straitsville, $2.50; $1 per ton higher at retail, delivered."

The San Francisco *Commercial Herald* of the 6th inst. says:

"Imports from January 1st to March 1st: Anthracite, 965 tons; Coos Bay, 7265 tons; Vancouver Island, 21,619 tons; Seattle, 21,752 tons; Carmel Bay, 100 tons. Supplies from the north are continued upon a liberal scale. The arrivals for the week include the following: From Coos Bay—Arcata, 350 tons; Aurora, 900 tons: from Nanaimo—George Filley, 2200 tons: from Seattle—Aureola, 1250 tons; Alaska, 2030 tons; Shirley, 845 tons: from Departure Bay—1517 tons Wellington, etc. The market is

very slack for all kinds, and prices in buyer's favor. The Wellington is taking fast hold of the household trade of the city. The price of this coal is $9, and Seattle $8 for screened. We see that dealers offer to sell Coos Bay, delivered to families in any part of the city, at $7.50. This is queer, when we consider that the cargo price of same to dealers is $7 from ship's side. Buyers of this would do well to examine the weight and quality of same. California Mount Diablo Steam sells from boat at $4.50@$5.50 for fine screenings and coarse respectively. It is generally claimed by dealers that the cost of drayage and delivering to families is not less than $2@$3 per ton; hence Wellington, West Hartley, and Scotch Splint sell to families delivered, at $12@$13; short ton all other kinds in proportion. There is no Australian here, and, so far as we know, very few cargoes now afloat en route, quotable at $7. Anthracite and Cumberland are both in liberal stock, with a restricted demand; prices both low and nominal. At the close, the market is rather weaker, and Australian cargoes for shipment can not now be sold at over $7 per ton. A few cargoes of West Hartley and Scotch Splint coal have been sold for prompt shipment at about $8 per ton, but dealers will not now pay over $7.50."

Cleveland. March 7, 1879.

[Specially reported by F. A. BATES, Esq.]

The following are quotations for coal on cars and for lake shipments per ton of 2000 lbs. Can not hear of any sales having been made for lake shipments. Do not anticipate any advance; yet there is no indication of any cutting in prices, as was the case last year:

Per ton of 2000 lbs. f.o.b. vessels.

WHOLESALE.	
Brier Hill (Church Hill)	$3.20
" " No. 2 Grades	3 00
Massillon	2.50
" No. 2 Grade	2.35
Monday Creek	2.50
Straitsville Lower Vein	2.50
Hocking Valley	2.50
Tuscarawas Valley	2.20
Columbiana	2.20
Nut coal, various grades	1.70@2.00
Screenings " "	1.25@1.60
Youghiogheny gas coals	3 50
RETAIL TRADE.	
Lump.	
Brier Hill lump	$4.00
Massillon and Mineral Ridge	3.50
Monday Creek	3.25
Straitsville Lower Vein	3.25
Hocking lump	3.25
Rich Hill	3.00
Columbiana	2.75
Nut.	
Massillon and Mineral Ridge	3.25
Monday Creek	3.00
Straitsville, Lower Vein	3.00
Hocking Valley	3.00
Columbiana	2.50

Hard Coal on Track.

	Wholesale.	Retail.
Steamboat	$5.40	$6.15
Grate	5.05	5.80
Egg	5.05	5.90
Chestnut	4.90	5.65

New York.

Wholesale Prices of Anthracite Coal Delivery f. o. b. at Tide Water Shipping Ports, per ton of 2240 lbs.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
WYOMING COAL.	$	$	$	$	$	$
Lackawana, at Weehawken						
*Pittston, at Weehawken	2 30	2 30	2 30	2 30	2 65	2 35
L. Val. Coal Co., at Amboy						
Honey Brook Lehigh	3 00		2 80	2 80	2 80	2 60
Wilkes-Barre at Pt. Johnson	2 40	2 40	2 45	2 45	2 80	2 60
Plymouth Red Ash at Port Johnson			2 45	2 50	3 10	2 70
LEHIGH COAL.						
†Spring Mount, Lehigh, at P. Amboy	3 25	3 00	2 85	2 85	2 85	2 75
Cross Creek, at Port John.	3 00	2 75	2 75	2 75	2 75	2 70
†Buck Mount. Vein at Elizabeth Port or S. A.	3 00	3 00	2 75	2 75	2 85	2 75
Fulton	3 40		3 00	3 00	2 85	2 75

* Forty cents per ton additional for delivery in New York.

† These prices are given by Whitney, McCreary & Kemmerer.

Wholesale Prices of Bituminous Coal.

MANUFACTURING AND STEAM COALS.		
Cumberland at Georgetown and Alexandria	2.75@2.90	4.35@4.50
Cumberland, at Baltimore	2.90@3.00	4.35@4.50

Cl'rfi'd "Eureka" and "Franklin."		
At mines	0.75	....
At Baltimore	3.25	4.50
At Philadelphia	3.25	4.50

DOMESTIC GAS COALS. Per ton of 2240 lb.	At the Shipping Ports.	Alongside at New York.
Westmoreland and Penn.	$4.25	
At Greenwich, Philadelphia		$5.50
At S. Amboy	5.00	5 50
Kanawha at Richmond	4.10	5.40
Red Bank Cannel, Pa., at Philadelphia	8.00	8.50
Youghiogheny, Waverly Co., at Balt	4.00	5.65
Despard, West Va	4.50	6 00
Murphy Run, West Va., at Baltimore	3.75	5.85
Fairmount, West Va., " "	3 75	5.70
Newburg Orrel. Md. " "	3.75	6.00
Cannelton Cannel, West Va		10.00
" Splint " at Richmond.	6.00	7.00
" Gas Coal at Richmond	4.00	5.65
Peytona Cannel, W. Va., at Richmond		10.00

FREIGHTS.

Coastwise Freights.

Per ton of 2240 lbs.

Representing the latest actual charters to March 14th, 1879.

PORTS.	From Philadelphia.	From Baltimore.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Alexandria	1.30		
Allyn's Point			
Annapolis	75		
Baltimore	50@60		
Bangor		1.85	
Bath, Me		1.75	
Boston, Mass	1.75§@2.00		1.25@1.50
Braintree			
Bridgeport, Conn		1.60	
Brooklyn			
Cambridge, Mass			
Charleston	1.50		
Charlestown			
Cambridgeport			
Danversport	1.95		
East Cambridge			
East Boston			
Fall River		1.60	90
Fortress Monroe			75
Galveston			
Georgetown			
Gloucester	1.80		
Hackensack			
Hartford		1.60	
Hoboken		1.15@1.25	
Hunter's Point			
Jacksonville			1.50
Jersey City		1.15@1.25	
Lynn	1.97½		
Marblehead			
Medford	1.90		
Middletown			
Newbern	1.20		
New Bedford		1.60	1.00
Newburyport	1.75	1.85	
New Haven		1.60	
New London		1.60	
Newport			
New York		1.50	
Newark		1.60	
Norfolk, Va	95@1.05		75
Norwich		1.75	
Norwalk, Conn		1.75	
Pawtucket		1.85	
Petersburg			1.10
Philadelphia		80	
Port Eades			
Port Royal			
Portland		1.75	1.00†@1.25
Portsmouth, Va	1.00		
Portsmouth, N.H.		1.85	
Providence		1.60	90
Provincetown	2.00		
Richmond, Va	1.10@1 27½		85
Rockland			1.65
Rockport, Mass.			
Sag Harbor			
Salem, Mass		1.60	
Savannah	1.60		
St. John, N. B.			1.00
Trenton		1.25	
Wareham		1.90	
Washington	1.20@1.30		
W'lmington, Del.		80	

* And discharging and towing. † And discharging. ‡ And towing. § 3 cents per bridge extra.

Ocean Freights.

Ocean Freights on coal, iron, etc., per ton of 2000 lbs. to and from foreign and domestic ports, for four weeks ending March 13th, 1879, are given below.

DATE.	From	To	Cargo.	R'te
Feb. 14	New York	Pichilingue	Coal	8.40
" 14	London	Savannah	*	2.00
" 18	Barren Island	Savannah	*	1.75
" 18	New York	Norfolk	‖	1.00
" 18	Philadelphia	Savannah	Guano	2.00
" 21	Baltimore	Baracoa	Coal	2.00
" 21	Ashley River, S. C.	Baltimore	†	2.15
" 21	New York	Savannah	Guano	2 00
" 21	New York	Philadelphia	Salt	3.50
" 21	New York	Richmond	*	1.00
" 21	New York	Richmond	‡	1.00
" 22	Ashley River	Wilmi'gt'n, Del.	*	2.25
" 25	Barren Island	Savannah	†	2.00
" 25	Linden, N. J.	Savannah	†	§
" 28	Weymouth	Wil'ngt'n, N. C.	*	1.25
" 28	Boston	Newark, N. J.	Bones	1.25
" 28	Barren Island	Savannah	*	2.00
" 28	New York	Charleston	Guano	2.00
" 28	Charleston	Baltimore	†	2.00
Mch. 4	Boston	San Francisco	Iron	**
" 4	Savannah	Philadelphia	Old iron	2.65
" 4	New York	Port Royal	¶	2.00
" 4	New York	Richmond	Pig-iron	††
" 7	South Amboy	New Orleans	RR. iron	3.25
" 7	New York	Charleston	‡‡	
" 7	Perth Amboy	Boston	Pig-iron	1.90
" 11	Cadiz	Boston	Salt	7¼c
" 11	New York	Wil'ngt'n, Del.	Pig-iron	1.00

* Phosphates. † Phosphate rock. ‡ Old rails. § $2 and towing. ‖ Peruvian guano. ¶ Phosphates and railroad iron. ** $8@$10. †† 90c.@$1. ‡‡ Fertilizers and sulphur.

Railroad Coal Freights.

On and after March 1st, until further notice, the rates of transportation on through coal, consigned as noted below, and passing over the Lehigh Valley Railroad Company's road from mines through, will be as follows:

To	From Penn Haven.	From Mauch Chunk.
Kennedy		1.50
Musconetcong and Bloomsbu'y.		1.60
*West End		1.65
*Pattenburg		1.75
Midvale, Landsdown, and Sunny-Side		1.75
Stanton, Flax Mill, and Flemington Junction		1.75
Three Bridges, *Neshanic, Flagtown, and South Somerville		1.75
*Bound Brook		1.75
*New Market		1.75
New Brooklyn and Fords		1.75
Woodbridge and Spa Spring		1 75
Voorhees, Clyde, Middlebush, and East Millstone		1.75
Jersey City, New Brunswick, and all intermediate points on the Main Line of the New Jersey Division of the Pennsylvania Railroad		1.22
Perth Amboy—Local		1.26
TIDE COAL.		
Mauch Chunk	14	
Phillipsburg	70	56
Perth Amboy	1.00	86
VIA MORRIS CANAL.		
Newark		
Jersey City		
New York		
VIA NORTH PENN RR.		
Philadelphia		1.50
VIA PERKIOMEN RR.		
Philadelphia		1.50

*Ten cents per ton to be added to rate for all coal dumped into coal pockets.

A deduction of 25 cents per ton will be made on the New Jersey Division of this road (except Perth Amboy) on coal consigned to coal-yard dealers, and to manufacturers using coal for generating steam.

This company will ship coal over their wharves at Perth Amboy, and will retain, as compensation therefor, all of the pea and dust resulting from such shipments.

On coal shipped from stock there will be a charge of 5 cents per ton, in addition to the pea and dust.

Coal standing in cars more than one working day, will, in the absence of vessels to receive it, be dumped upon the wharf.

MORRIS CANAL.

On coal received by canal at Jersey City a charge additional to the freight of 20 cents per ton will be made for transferring it from boat to boat, and 30 cents per ton for placing the same on the wharves and re-shipping.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, March 14, 1879.

American Pig.—The Thomas Iron Company reports sales of about 3000 tons of Nos. 1 and 2 Foundry iron, and is asking $18 and $17 respectively. We note a sale of 300 tons of Allentown No. 1 Foundry iron, at $17.50. There has been a moderate business in other brands of iron. Buyers do not take kindly to the advancing market, but as all have been running quite bare of stocks, they are compelled to supply their actual necessities, which, having increased of late, makes a very fair business. Some of the makers of iron have great expectations, but too much of a rise will cause more furnaces to go into blast, which may result in a decline. The business in anthracite iron in the West is extending very much, and promises to absorb a very large proportion of this year's product. We quote No. 1 Foundry at $17.50@$18, No. 2 Foundry at $16.50@$17, and Forge at $14.50@$16.

Scotch Pig.—The arrivals have been 200 tons, which were sold previously. The business is very quiet. We quote Eglinton at $20; Coltness, $22, and Glengarnock, $20.50@$21.

Messrs. John E. Swan & Brothers, of Glasgow, in their circular of February 28th, report 89 furnaces in blast against 85 a year previous, and 217,116 tons in store in Connal & Co.'s store. This was an increase for the week of 3808 tons. The shipments to February 22d showed an increase of 9342 tons, as compared with same time last year. The imports of Middlesbrough pig-iron show a decrease this year of 5242 tons. The leading brands of No. 1 iron were quoted as follows: Gartsherrie, 48s. 6d.; Coltness, 51s.; Langloan, 50s.; Summerlee, 46s. 6d.; Glengarnock, 46s.; Eglinton, 43s. 6d.; Middlesbrough pig-iron f.o. b., Tees, was quoted as follows: No. 1, 37s. 6d.; No. 2, 36s.; No. 3, 34s.; No. 4, 33s. 6d.

Rails.—We learn of no transactions. There is a very good demand for steel rails for early delivery,

and prices are very firm. There is considerable inquiry for iron rails and we expect to be able to report some sales in our next. We quote steel rails at mills at $43@$44, and iron rails here at $36@$37.

Old Rails.—Without business, we quote at $20.50 @$21.

Wrought Scrap.—Sales aggregating 1650 tons are reported. We quote at $23@$24.

Our Pittsburg correspondent writes, March 11th, as follows:

"The demand continues moderately active for desirable brands of pig-iron, while the poorer qualities remain neglected. There has been a little more inquiry for foundry iron, but it is still dull for the season. Prices are unchanged."

The Baltimore market remains as last reported. From Louisville, Ky., we have the following, dated March 11th:

"The demand is improving with a very firm market. Sales are generally at outside figures. We anticipate further advance on all grades of iron."

Advices from Cincinnati, of the same date, indicate a slight decline in nearly all brands of pig-iron.

METALS.

NEW YORK, Friday Evening, March 14, 1879.

The past week has been a very quiet one, the consumptive business having been very small, and but one article showing any speculation.

RECEIPTS OF METALS AT NEW YORK FOR THE TEN WEEKS ENDING MARCH 13TH AND YEAR FROM JANUARY 1ST, 1879.

	Feb. 20	Feb. 27	Mar. 6	Mar. 13	Year from Jan. 1.
Copper, bbls	151	57	31	18	1,299
Copper, boxes	.....	.....	.....	.....	.....
Copper, cakes	247	807	91	321	2,828
Lead, pigs	4,002	2,409	5,263	4,671	31,485
Spelter, pieces	3,714	865	2,060	7,525	28,115
Quicksilver, flasks	.....	.....	.....	.....	.....

Copper.—There is but very little copper offering, and the demand is even smaller. The asking price is 16c., although small sales are reported at a less rate. There are indications of a large export movement. Should a sale be made, it will be at a very low figure, and afterward the market will probably be in very good shape.

From London, under date of February 28th, we have received the following:

"The firmness in Chili bars continues, but demand is rather slack at the advanced rates. A small trade is reported in common brands at £55 cash, and in favorite sorts at £55½ cash, £55¾ distant arrival, but the total transactions amount only to about 125 tons. The quantity of metal on sale is comparatively limited, and although there are nearly 23,000 tons bars in stock, not more than 2@3 per cent could be obtained at or near ruling values. We call common marks, £54¾@£55; favorite, £55¼@£55½; best sorts, £55½@£56, and not any great disposition either to buy or sell thereat. Wallaroo Cake remains £63@£64 and Burra £62@£63 on a moderate inquiry at the lower rates, and a few sellers at the higher."

Statistics of Copper in London, Liverpool, Swansea, and France.

	—Feb. 1 to 28.— Imports. Tons.	Deliveries. Tons.	
Fine foreign, chiefly Australian	1,307	718	London.
Chili Bars	Nil.	Nil.	Liverpool & Swansea.
Chili " and ingots	1,666	1,926	Liverpool & Swansea.
Chili in ores and regulus	501	501	Liverpool & Swansea.
Totals, England	3,474	3,145	
Fine foreign, chiefly American	250	200	France.
Chili bars, ingots and barilla	210	773	France.
Total	3,934	4,118	

	—Stocks.— Feb. 28th. Tons.	Jan. 31st. Tons.	
Fine foreign, chiefly Australian	6,544	5,955	London.
Chili Bars	49	49	London.
Chili " and ingots	22,664	22,924	Liverpool & Swansea.
Chili in ores and regulus	4,136	4,136	Liverpool & Swansea.
Totals, England	33,393	33,064	
Fine foreign, chiefly American	300	250	France.
Chili bars, ingots and barilla	5,760	6,323	France.
Total	39,453	39,637	
Chili, chartered and afloat Mail	8,814	7,615	
Chili, chartered and afloat Telegram	4,600	3,600	
Total	52,867	50,852	

Tin.—We are reported sales of 100 tons on spot, at 14⅝@15c., and 75 tons, January and February shipments, at 14¾c. The price at the close is 15c. for Straits on spot, and 14¾c. for February shipments. The London price is £65. Singapore quotes at $19.75. Cable advices report an absence of stocks at Singapore and Penang. The London market has advanced £2 on English tin. L. & F. here is quoted at 14½c., and Refined at 14¾c. All spot lots of tin have been absorbed, and also all arrivals for the next thirty days, so that a firmer maket is expected.

Our advices from London, bearing date of February 28th, are as follows:

"Imports of Australian and Straits for February were 1361 tons, besides 131 tons which went over side to America. The deliveries were 1188 tons, and stock is now 9696 tons. Dutch deliveries in February were 600 tons. The London market is further depressed, and only a few transactions recorded, from 63¾s. down to 63⅛s., closing sellers 63⅛s."

Tin Plates.—The business of the week has been very dull, and there is a strong disposition to sell. The English market is also weaker. We quote, per box, as follows: Charcoal, bright, ⅛ X, Melyn grade, $6.25, and Allaway grade, $6.12½; Charcoal ternes, Allaway grade, $5.75; coke, bright, B. V. grade, $5.30@$5.37½, and coke roofing, 14×20, $5.

Lead.—A sale was made at St. Louis at 3¾c., and as freights to New York are but 25c., it equals 4c. here. When this was learned 200 tons were sold here at 4c., since when the market has been very weak and unsteady. It is difficult to give a quotation. This sudden decline has come a little earlier than was expected, although it was an ultimate certainty. The production of Utah in February showed a falling off of about 1000 tons, as compared with the same month last year. The San Francisco *Commercial Herald* of March 6th notes the shipment to New York, by the City of Panama, of 1914 tons of Richmond lead, valued at $11,700, and 250 bars of base bullion, valued at $3000.

The Eureka Company is standing firmly in this market in the position it has held all winter, and is out of the market at the present prices.

Spelter and Zinc.—Spelter is very quiet, and quoted at 4⅜@4½c. Sheet zinc is dull at 6¼c. Bergen Port spelter, from New Jersey ores, is quoted at 9c.

Antimony is quite inanimate. Cookson's is quoted at 12c., and Hallett's at 11¾c.

Quicksilver.—The San Francisco *Commercial Herald* of March 5th says: "The market is sluggish, the demand light, and the price nominal, at 37½c. The Newbern, for Mexico, carried 78 flasks. The Alaska, for China and Japan, carried a very large shipment—2661 flasks—for Hong Kong, valued at $82,723. The City of Panama, for Mexican ports, carried 937 flasks, valued at $26,998; for Central America, 20 flasks, valued at $573.

THE BULLION MARKET.

NEW YORK, Friday Evening, March 14, 1879.

The silver market is weak in London, to-day, at 49¾d., under the influence of the exchanges with the East, which continue very unfavorable to silver, and are more than likely, we think, to lower the price still further, especially as this tendency will be promoted by the very considerable amounts that are being sent regularly from this country to a market already nominal and weak.

A telegram from London, to-day, says: "The Indian silver markets are depressed because it is believed the Indian budget does not provide a remedy for the depreciation of the currency."

The market closes here at $1.08⅛@$1.07⅞ and in San Francisco at 16 per cent discount.

BULLION SHIPMENTS.

We give below a statement showing the latest bullion shipments in addition to those announced in our issue of March 8th:

February 26th	Tybo Con	Nev	$8,158.60
" 28th	Alexander	"	8,200.00
March 1st	Northern Belle	"	11,605.43
" 1st	Paradise Valley	"	3,480.88
" 3d	Hillside	"	10,550.00
" 3d	Grand Prize	"	12,500.00
" 3d	Independence	"	6,300.00
" 3d	Highbridge	"	9,911.00
" 4th	Martin White	"	17,788.00
" 5th	Manhattan	"	17,633.00
" —	Eureka	"	14,314.12
February 28th	Mammoth	Cal	3,200.00
" 28th	Vulcan	"	4,612.48
" 28th	Standard	"	15,880.77
March 1st	Bodie	"	8,889.00
February 28th	Christy	Utah	6,272.00
March 5th	Stewart	"	12,500.00
" 6th	McCormick & Co.	"	37,200.00
" 6th	Silver Reef	"	*42,950.37
February	Stermont Mill	"	†40,354.82

* Production for February, $109,113.12.
† For month of February.

The New Orleans Mint.—Operations at this mint are resumed. Thus far about $41,000 in silver have been coined. There have been no purchases for this purpose other than old Mexican and Spanish coin and worn silver ware. Offers of large quantities of silver have been made by dealers in New Orleans, but at prices the Secretary of the Treasury was not willing to pay.

Silver not to be Forced into Circulation.—A Washington dispatch to the Cincinnati *Commercial* says: "Secretary Sherman has decided, after consultation with leading Treasury officials, not to force silver dollars upon creditors of the government who are unwilling to take them. Shortly after the assembling of Congress, it is understood that a bill will be introduced requiring the Secretary to pay out a certain per cent of these dollars in current disbursements."

United States Bullion Purchases.—WASHINGTON, March 12.—The Treasury Department this afternoon purchased about 400,000 ounces of silver bullion for delivery at the San Francisco Mint. There were no offers for delivery at New Orleans. The Department has discontinued the purchase of bullion for the Carson City Mint, on account of the high prices asked by dealers and the excessive cost of transportation. Under the present ruling of the Department as to prices for delivery at New Orleans, it will be impossible to put that mint in full operation. An act of Congress will be necessary to enable the Secretary to pay the cost of delivery at New Orleans, or to transport to that mint a portion of the immense amount now on hand at the Philadelphia Mint. There is a large surplus at this latter point, and purchases for delivery there have been discontinued for some time.

Salt Lake Ore and Metal Market.

SALT LAKE CITY, Utah, March 14, 1879.

Argentiferous Lead (Base Bullion), $35 per ton for lead; $1.12 per ounce for silver; $20 per ounce for gold. The quotations for silver are based upon the silver in the lead of 80 to 120 ounces per ton of 2000 lbs.

Mr. J. B. Meader, under date of March 8th, reports the following shipments:

Shipments of base bullion for February, 1879		3,092,333 lbs.
Shipments of base bullion for January, 1879		2,717,861 "
Total shipments of base bullion for two months, 1879		5,810,194 "
Ore shipments for February, reduced to lead	91,560 lbs.	
Ore shipments for January, reduced to lead	686,600 "	
		778,160 "
Total shipments of lead for two months, 1879		6,588,354 "
Same time for 1878		8,994,327 "
Decrease in 1879		2,405,973 "

FINANCIAL.

Copper Stocks.

Reported by WILSON W. FAY & Co., Brokers in Mining and Miscellaneous Stocks, Room 7, Traveller Building, 31 State street.

BOSTON, Thursday Evening, March 13, 1879.

The stocks show an upward tendency and a very firm appearance throughout the list, some of them having advanced from one to two per cent from the decline in the early part of the week, and looking as if they would go still higher. The tightness of the money market has ceased somewhat, and the whole stock market has consequently become more active and firm, and there is every reason to expect that we shall yet have an active market in these stocks, as the effects of the near approach of spring are already beginning to be felt.

Calumet & Hecla is still firm, at 173½@173¾, and sales at 174.

Copper Falls is steady, at ⅝@¾, and sales of a few lots at ⅝.

Mr. John Brooks has been elected Treasurer of the Company to fill the vacancy caused by the death of the late Treasurer, and the stockholders expect that things will work more favorably under the new management.

Franklin is quiet, there being no bid or ask during the week.

Osceola is quite strong, having jumped from 11 to 12 and sold at that figure, and closes 11¾@12⅛.

Pewabic is also firm at ⅞@$1.00.

Quincy is strong at 11@11½, all the cheap stock that comes on the market being taken.

Ridge is firm at ⅞@1.00; is undoubtedly selling too low, there being but very little stock on the market.

The company has issued its annual report, dated March 6th, 1879, showing a cash balance on hand of $33,304 on January 1st, 1879, and its assets to be $38,916.39 and liabilities $5612.39, and makes otherwise a very good showing.

Duncan has advanced to 4 15-16@5.

The date of sale of delinquent assessment stock has been set for March 25th, 1879.

International is firm at 55@60.

Silver Islet is strong at 51¼@52.

February Copper Products.—The mines reporting send in the following products for February:

	Tons.	Lbs.
Calumet & Hecla	1,256	1,270
Osceola	158	
Quincy	130	855
Franklin*	122	990
Allouez Tribute	80	1,435

* Mill idle equal to four days.

Gas Stocks.

NEW YORK, Friday Evening, March 14, 1879.

The market is steadily rising, noticeably so with Brooklyn stocks, which show an advance of from 2 to 4 per cent over last week's quotations.

Gas Stocks and the Electric Light Abroad.—A recent issue of the London *Economist* says gas stocks advanced because the electric light appears to be both expensive and troublesome.

The Philadelphia *Ledger* of to-day, says in this connection: "Electric lighting in Paris has been officially declared an economical failure, the actual cost of the light, when compared with gas, being as 73 is to 23, and were the cost reduced to the limit which electric engineers consider possible, there would still be a great difference in favor of gas. There is a great waste of the illuminating power of the electric light by the necessary use of opaque globes to mitigate the intense glare. The statements of cost as here given do not settle the problem of electric lighting, however, for they relate only to the illumination obtained by the combustion of carbon. The system of lighting by incandescence, if it can be made to work with success, promises to reduce the cost and inconvenience of electric lighting in many ways. But it has not yet been demonstrated that the system of lighting by incandescence can be adapted to general purposes of illumination. Edison must be heard from again before the

attempts to perfect a system of electric lighting are abandoned."

Cleveland, Ohio, on April 1st, will light its streets and parks with the Brush electric light, the contract between the Cleveland Telegraph Supply Company and the city having been signed.

At a recent meeting of the Allegheny Gas Committee the propositions from the different gasoline lamp manufacturers were read, as was also the report of the sub-committee recommending that the Irwin globe lamp and burner be adopted. The report was approved, and it was decided to recommend to Councils that gasoline lamps be erected, but only at such points at which there is no gas main.

The Manufacturers' Gas Co., of Fall River, Mass., at a recent meeting, resolved to go into insolvency on account of irregular paper issued by Charles B. Stickney, amounting to about $60,000.

Halifax Gas-Light Co. has declared a half-yearly dividend of 5 per cent. At the meeting of the company it was resolved to reduce the price of gas to $2.50 per 1000 feet; the price of late has been $2 80.

The New Gas Co., of London, Ont., propose charging $1.50 per 1000 feet for the r product. The works are to be situated in the eastern part of the city.

The Consumers' (Valparaiso, Chili) Gas Co. held its semi-annual meeting on February 28th, and declared a dividend of $12 per share.

AUCTION SALES:

Brooklyn Gas-Light Co.—250 shares, at 140.

Nassau Gas-Light Co.—136 shares, at 72½@70; $2225 do., do., scrip, at 96½@95 per cent.

Williamsburg Gas-Light Co.—58 shares, at 86; $937.50 do., do., scrip, at 93 per cent.

Metropolitan (Brooklyn) Gas-Light Co.—2 shares, at 60¾.

Metropolitan Gas Co.—47 shares, at 121; $315 do., do., scrip, at 102.

Manhattan Gas-Light Co.—25 shares, at 192.

Citizens' (Brooklyn) Gas Co.—12 shares, at 80.

New York Gas Co.—4 shares, at 100.

MISCELLANEOUS SALES:

People's Gas Co., of Baltimore.—172 shares, at 15@12⅜ per cent.

Baltimore Gas Co.—2000 shares, at 99¼c. per share.

The following list of Companies in New York and vicinity is corrected weekly by GEORGE H. PRENTISS, Broker and Dealer in Gas Stocks, No. 30 Broad street, New York:

COMPANIES IN NEW YORK AND VICINITY.	Capital Stock.	Par.	DIVIDENDS. Rate per ann.	Am. of last.	Date of last.	QUOTATIONS. Bid.	As'd.
	$		P. ct.				
Mutual, N. Y.	5,000,000	$100	6	1½	Jan., '79	72½	76
" Bonds	90,000	1,000	6	3½	Feb., '79	98	100
N. York "	4,000,000	.....	8	4	Nov, '78	100	105
Metrop. "	2,500,000	100	10	5	Feb., '79	115	125
" Certfs.	1,000,000	.....	7	3½	Feb., '79	98	102
Harlem "	1,850,000	50	6	3	Feb., '78	35	45
Manhat. "	4,000,000	50	....‡	5	Feb., '79	180	190
Brooklyn, Bkln.	2,000,000	50	15	5	Jan., '79	140	150
Nassau	1,000,000	25	....‡	3	Jan., '79	75	80
" Certfs.	700,000	1,000	7	3½	Nov. '78	95	100
People's	1,000,000	10	....‡	3½	Jan., '76	26	30
" Certfs.	300,000	1,000	7	3½	Jan., '79	75	80
" Bonds	325,000	.....	7	3½	May, '78	90	95⅛
Metrop. "	1,000,000	100	5	2½	Nov., '78	60	65
W'msb'g "	1,000,000	50	8	1½	Jan., '79	81	90
" Certfs.	1,000,000	.....	7	3½	Jan., '79	85	95
Citizens'	1,200,000	20	....‡	3	Jan., '79	75	80
" Certfs.	320,000	1,000	7	3½	Oct., '78	90	100
J. C., N. J.	750,000	20	10	7½	Jan., '79	145	155
Municipal, N. Y.	466,000	50	.....	.....	.....	115	125
" Bonds	750,000	.....	.....	.....	.....	95	....
.....	.....	.....	.....	.....	.....	.....	....

Gold and Silver Stocks.

NEW YORK, Friday Evening, March 14, 1879.

The interest in mining continues to grow at a very rapid rate, and the investments that are constantly being made aggregate quite largely. Numerous enterprises of moderate dimensions have lately been floated. Mr. William M. Lent lately brought to this market a portion of the stock of the Standard Company. This was placed in the hands of Messrs. Lounsbery & Haggin. The first sales were at $20 per share, after which the price was advanced to $22.50, at which it was all closed out. Since then the price in the market has advanced to $27. This stock will probably be listed at the New York Stock Exchange in a very short time, being now under consideration by the security committee, and will make on that list three first-class dividend-paying mines. Mr. B. B. Miner, in speaking of this mine before the Bullion Club last night, stated that it had secured a perfect title, having made a compromise with those who claim to have purchased under the grant for school purposes. He also placed a much larger estimate on ore "in sight" than Capt. Taylor does in his report. The success of Messrs. Lounsbery & Haggin, in floating the Ontario, Homestake, Standard, and some smaller enterprises certainly shows that there is a market in the East for good mines. They, however, appear to realize the wants of Eastern investors, and the quantity and quality of information to lay before them.

At least two large enterprises will be on the market next week, while two others, to be sold on the basis of half a million or more, are promised.

During the past week, more shares of stocks changed hands at the Mining Exchange than in any previous week since its organization. There was a very active business in the fancies, while the San Francisco stocks were comparatively neglected. In the better class of mining stocks on the lists of both Exchanges there was a very liberal business. Outside of the Exchanges there was a moderate business in the San Francisco stocks. There are so many good and promising mines coming under New York management or representation that the attention of the public is being rapidly turned toward them, in preference to those mines under the management of the San Francisco rings.

We note the following transactions in the San Francisco stocks: Bodie, 220 shares, at $6@$6⅝; California, 80, at $5½@$6¼; Consolidated Virginia, 290, at $5⅜@$6; Eureka, 20, at $26¼@$26; Grand Prize, 500, at $4.90@$5¼; Independence, 550, at $1.60@$1.50; Hussey, 3600, at 25@15c.; Leviathan, 505, at 25@32c.; Tuscarora, 12,800, at 8@11c.; Consolidated Imperial, 300, at $1.

At the New York Stock Exchange the dealings have been as follows: Homestake, 1832 shares, at $30¼@$35; Ontario, 525, at $39½@$40¼; Quicksilver Preferred, 100, at $34½; Quicksilver Common, 415, at $11@$12; Sutro Tunnel, 4700, at $2¾@$3⅝.

The dealings in the better class of stocks of the Mining Exchange have been as follows: Bobtail, 200 shares at $1.75; Findley, 20,700, at 55@63c.; Hukill, 700, at $3.05@$3; Moose, 1100, at $4@$4.10; New York & Colorado, 1800, at $1.70@$2.10; Plumas, 2750, at $3.20@$3.40; Leadville, 6610, at $2.50@3; Trio, 200 at 51c.

Even the walking match was not sufficient to disturb the gambling in the fancies. The transactions have been as follows: American Flag, 4800 shares, at 21@26c.; Bertha & Edith, 193,550, at 21@33c.; Buckeye, 63,200, at 22@36c.; Dahlonega, 44,600, at 19@25c.; Gold Placer, 73,935, at 25@33c.; Granville, 500, at 20c.; Lacrosse, 64,100, at 29@35c. The values of the above mines, as represented by the market prices of the stocks, would buy many good dividend-paying mines, while these properties have not paid dividends, and show but little, if any, prospects of ever doing so.

The Leadville Mining Co. sought and obtained a temporary injunction restraining the Little Giant mine from taking ore from their shaft, alleging that the Carbonate mine of the Leadville Co. was the first discovered, had a true vein or lode, and said vein ran over their side-lines into the Little Giant; therefore, the Little Giant was trespassing upon their vein. On the 12th inst., the final hearing of this case was held before Judge Hallett, of the U. S. District Court, Denver, and after hearing the evidence and arguments of the counsel on either side, promptly dissolved the injunction. It is said that General Vinton testified that if there was a vein on either of said properties the outcrop thereof was on the Little Giant, and not on the Leadville property. We hear the owners of the Little Giant will at once commence an action for damages against the Leadville Mining Company, and may also act upon the testimony of General Vinton and other experts, and turn the tables upon the Leadville Company by a suit to prevent the Leadville Co. from trespassing upon their property. Should they prove that they have the vein and the out-crop of the vein, it would be a very serious matter for the Leadville Co. Another curious fact is said to have been developed by this suit, viz.: That in the examinations made by surveyors and experts employed in collecting evidence for the suit just decided, it was found that the Etna Co., owning the mine next adjoining the Carbonate mine of the Leadville Co., had run a drift from their shaft 125 feet over their side-line and directly into the Carbonate mine for that distance. This may also lead to some interesting litigation, but so far, it is said, the Leadville Co. has taken no steps to stop the Etna Co., and a question which may be interesting to the stockholders of the Leadville Mining Co. is, why is the Etna thus allowed to drift into their mine without any attempt being made to stop it?

The Homestake Mining Company has declared its third dividend of 30c. per share, payable at the office of Wells, Fargo & Co., on the 25th inst. The transfer-books close on the 20th inst.

The Bertha & Edith Company estimates that $14,800 will erect a 20-stamp mill, and enable the company to earn $450 per day net. But to provide against all contingencies it is proposed to issue $25,000 of bonds, extending over five years, and bearing 7 per cent interest, and 2 per cent on the gross earnings of the mill. The prospectus issued is as rose-colored as any we have seen for a long time.

Mr. Edward Learned, President of the Silver Islet Company, is said to have taken an interest in Arizona mines.

About one half the Buell stock is already taken up, and further subscriptions have been promised.

It is now said that it is probable that the Leadville Company will declare a dividend to-morrow.

It is said that the Hukill mine has made a very good strike on the Whale property.

The Superintendent of the Ontario mine has telegraphed that the 40-stamp mill will be running full capacity to-day or to-morrow. The water is all out of the mine, and the regular supply of ore is being furnished to the mill. The mine was found to have suffered no damage from water.

A consolidation of the Dunderburg, Sub Treasury, East Terible, and othervaluable lodes near Georgetown, Col., has been made, and a company with the coporate title of the Dunderburg Consolidated Mining Company, is soon to be formed under the laws of New York, to work said mines. Two or three promineut banking houses in this city are identified with the enterprise, and the combination that made the purchase is a strong one. The profits of these mines in 1878 were very large, sufficient to pay continuous and regular dividends. As several of the mines are developed and in good order, no money will be required for working capital. This consolidation of interests removes all probable grounds of litigation which previously existed. The company is to be a New York organization and managed by New York capitalists. A prospectus will be issued in a few days giving full details of the production and prospective value of the stock. We are told that only a portion of the stock will be offered to the public, as most of it will be held by the gentlemen interested in the purchase of the property.

SAN FRANCISCO MINING STOCK QUOTATIONS.

Daily Range of Prices for the Week.

NAME OF COMPANY	CLOSING QUOTATIONS. Mar'h 7.	Mar'h 8.	Mar'h 10.	Mar'h 11.	Mar'h 12.	Mar'h 13.	Opening. Mar'h 14.
Alpha	17½	18	18½	18	19	19½	20⅛
Alta	5⅛	5¼	5½	5⅛	5¼	5⅛	5¼
Argenta	....	....	....	....	....	....	....
Bechtel	....	....	....	....	....	....	....
Belcher	6⅜	6½	7⅜	7⅝	8⅛	8⅞	9⅝
Belle Isle	....	....	....	....	....	....	....
Benton	....	....	....	....	....	....	....
Best & Bel.	18	18½	20½	18½	19½	19	19¼
BlackHawk	....	....	....	....	....	....	....
Bodie	6⅛	6	6	5½	6⅛	6	....
Booker	....	....	....	....	....	....	....
Bullion	5⅜	5¾	6⅛	5¾	6	6	6⅜
Bulwer	....	....	....	....	....	....	....
Caledonia	2¾	2⅞	3¼	3	3	3	3
California	5⅜	5⅝	5¾	5¾	5⅞	6	5⅞
Chollar-Pot	40	41	43	42	43	45½	47½
Confidence	....	....	....	....	....	15¼	....
Con. Imp	....	....	....	....	....	....	1.55
Con.Va.	5⅜	5⅝	5¾	5¼	5⅜	5⅝	5¾
Crown P'int	4¾	4⅞	5¼	5⅛	6	6½	7
Endowm'nt	....	....	....	....	....	....	....
Eureka Con	28	27¾	27¾	28	27¾	26	....
Exchequer	4¾	5	5¼	5	5⅛	5⅜	5⅝
Goodshaw	....	....	....	....	....	....	....
Gould &Cur	9¼	9⅞	10⅞	10	10⅜	10½	11
Grand Prize	4½	4⅝	4⅞	5⅛	5	4⅝	....
Hale & Nor.	14⅛	14¾	17	16¼	16	17¾	17
Hamburg	....	....	....	....	....	....	....
Homestake	....	....	....	....	....	....	....
Hussey	....	....	....	....	....	....	....
Indep'd'nce	....	....	....	....	....	....	....
Jackson	....	....	....	....	....	....	....
Julia Con.	5½	5⅝	5⅝	5⅝	5⅝	5⅝	5½
Justice	4⅛	4¼	4¼	4¼	4¼	4¼	4¼
Kentuck	....	....	....	....	....	5½	5⅝
Kossuth	....	....	....	....	....	....	....
Leopard	....	....	....	....	....	....	....
Leviathan	....	....	....	....	....	....	....
Manhattan	....	....	....	....	....	....	....
McClinton	....	....	....	....	....	....	....
MeadowVal	....	....	....	....	....	....	....
Mexican	37½	40	42½	39	40¼	39½	40½
Mono	....	....	....	....	....	....	....
Navajo	....	....	....	....	....	....	....
North. Belle	9⅜	9¾	10	10	10½	10⅞	....
Ophir	35¼	37	37¼	35	35¾	35	35½
Orig. K'ys'e	....	....	....	....	....	....	....
Overman	11⅝	12¼	12½	12¼	12½	12½	12¼
P. Sheridan	....	....	....	....	....	....	....
Ray. & Ely	6½	6	6¾	6¾	6¼	6¼	....
Richer	....	....	....	....	....	....	....
Savage	11¾	11⅝	14	13	13⅞	13¾	14⅜
Scorpion	....	....	....	....	....	....	....
Seg.Belcher	....	....	....	....	....	27	27
Sierra Nev.	45	47	47½	46	46¾	47	48
Silver Hill	....	....	....	....	....	2	2¼
Silver King	....	....	....	....	....	....	....
Summit	....	....	....	....	....	....	....
Tioga	....	....	....	....	....	....	....
Tip Top	....	....	....	....	....	....	....
Union Con.	65½	74	78	72½	74	73½	76
Utah	....	....	....	....	....	18	18
Ward	....	....	....	....	....	....	....
WashoeCon	....	....	....	....	....	....	....
Wells Fargo	....	....	....	....	....	....	....
Yel. Jacket.	16¾	17½	18¾	18⅝	19¾	19¾	20
....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....

REVIEW OF THE SAN FRANCISCO MARKET.

A decidedly better feeling is observable in the quotations of the San Francisco list, and especially in the

GENERAL MINING STOCKS.

Dividend Paying Mines.

NAME AND LOCATION OF COMPANY.		Feet on Vein.	Capital Stock.	SHARES. No.	SHARES. Par Val	ASSESSMENTS. Total levied to date.	ASSESSMENTS. Date and amount per share of last.			DIVIDENDS. Total paid to date.	DIVIDENDS. Last Dividend.			Rate p. An	HIGHEST AND LOWEST PRICES PER SHARE IN CURRENCY AT WHICH SALES WERE MADE. Mar. 8. H.	Mar. 8. L.	Mar. 10. H.	Mar. 10. L.	Mar. 11. H.	Mar. 11. L.	Mar. 12. H.	Mar. 12. L.	Mar. 13. H.	Mar. 13. L.	Mar. 14. H.	Mar. 14. L.	SALES.
Alps	Nev.	800		30,000		204,000	Aug.	1878	$1 00	37,500	Apr.	1876	$0 05													
Belcher, G. S.	Nev.	1,040	10,400,000	104,000	100	1,496,200	Feb.	1879	1 00	15,397,200	Apr.	1876	1 00													
Bobtail, G.	Col.	2,500	1,136,630	227,326	5	*				56,831	Nov.	1877	25					1.75								200
Fobtail Tunnel, G.	Col.		100,000	20,000	5	52,000	July	1873	0 30	48,000	June	1878	50													
Bodie, G.	Cal.		5,000,000	50,000	100	25,000	Feb.	1878	0 50	800,000	Jan.	1879	1 00		6					6		6⅝				220
California, G. S.	Nev.	600	54,000,000	540,000	100					30,240,000	Jan.	1879	1 00		5½					6		5⅞	5¾	6¼		80
Calumet & Hecla, C.	Mch		2,000,000	80,000	25	1,200,000				13,850,000	Feb.	1879	5 00					174		174						30
Central, C.	Mch		500,000	20,000	25	100,000	June	1862	0 65	1,260,000	Feb.	1877	5 00													
Chollar Potosi, G. S.	Nev.	1,400	2,800,000	28,000	100	1,750,000	Sept.	1878	5 00	3,050,000	Feb.	1872	1 00													
Copper Falls, C.	Mch		1,000,000	20,000	50	535,000	May.	1876		100,000	Nov.	1871	1 00													
Cons. Virginia, G. S.	Nev.	710	51,000,000	510,000	100	474,600	June	1873	3 00	10,500,000	June	1878	1 00		5⅝		5⅝		5⅛	5⅜	5⅝	5½	5¼		6	5⅞	290
Confidence, G. S.	Nev.	130	2,496,000	24,960	100	256,320	Apr.	1878	0 50	78,000	May.	1865	8 ½													
Cons. Her. & Roe	Col.	16,500	1,000,000	100,000	10	*																				
Crown Point, G. S.	Nev.	600	10,000,000	100,000	100	1,973,370	Dec.	1878	1 00	11,588,000	Jan.	1875	2 00													
Daney	Nev.	2,000		108,000		91,800	Nov.	1878	0 2	56,000	July	1833														
Eureka Cons., G. S. L.	Nev.		5,000,000	50,000	100	100,000	May.	1876	1 00	3,600,000	Feb.	1879	2 00													
Eureka G. Mg., G.	Cal.	1,680	2,000,000	20,000	100					2,149,000	Apr.	1878	0 25													
Findley, G.	Geo.		200,000	200,000	1					40,000	Feb.	1879	10		60c	55c	63c	59c	59c		62c	58c			60c	59c	20700
Franklin, C.	Mch		500,000	20,000	25	360,000	June	1876	5 00	585,000	Nov.	1871	1 00													
Gila	Ariz			100,000		7,000	Jan.	1879	0 25	50,000	Aug.	1875	0 25													
Gould &Curry, G. S.	Nev.	612	10,800,000	108,000	100	2,828,000	Nov.	1878	1 50	3,826,800	Oct.	1870	10 00													
Grand Prize	Nev.	1,500		100,000		100,000	July.	1878	1 00	400,000	Feb.	1878	1 00				4.90		5.25	5						500
Hale & Norcross, G. S.	Nev.	400	11,200,000	112,000	100	2,970,000	Dec.	1878	0 50	1,598,000	Apr.	1871	5 00													
Homestake, G.	Dak		10,000,000	100,000	100					60,000	Feb.	1879	30		30⅛		32	30¼	33	32	35	34	35	33¼	34	33	1,832
Hukill, G. S.	Col.	3,288	1,000,000	100,000	10	*					Dec.	1878	0 10				3.05				3						70
Independence	Nev.	1,500		100,000		75,000	Feb.	1878	15	150,000	Nov.	1878	25		1.60	1.55	1.60	1.55			1.50						550
Kentuck, G. S.	Nev.	95	3,000,000	30,000	100	300,000	Aug.	1878	1 00	1,252,000	Mar.	1870	5 00													
K. K. Cons.	Nev.			50,000		30),000	Jan.	1879	1 00	50,000	Sept.	1873	0 25													
Leeds	Uth.	3,000		60,000						78,000	Oct.	1878	0 15													
Leopard, L. G. S.	Nev.	1,500	5,000,000	50,000	100	200,000	Jan.	1879	50	162,500	Dec.	1876	0 50													
Manhattan	Nev.			50,000		50,000	Oct.	1878	1 00	400,000	Feb.	1877	1 00													
Merrimac, S.	Mas.	1,500	500,000	100,000	5	*	June			120,000	Mar.															
Minesota, C.	Mch.		1,000,000	20,000	50	436,000				1,820,000	Mar.	1876	0 50													
Modoc	Cal.	4,000		100,000		480,000	Feb.	1879	0 50	50,000	Dec.	1876	0 50													
Moose	Col.	39,000	2,000,000	200,000	10	*				550,000	Mar.	1878	0 25		4.10	1.00			4.10		4.60		4.10				1,100
National, C.	Mch.		500,000	20,000	25	195,000	Oct.	1875	1 00	360,000	Oct.	1873	1 00													
N. Y. & Colorado, G.	Col.		1,000,000	50,000	20	*				20,000	Mar.	1877	0 20		1.70						2.10	1.80			2.10		1,800
Northern Belle, S.	Nev.	1,600	5,000,000	50,000	100					1,425,000	Feb.	1878	1 00													
Ontario.	Uth.	3,000	10,000,000	100,000	100					2,050,000	Mar.	1879	50													
Ophir, G. S.	Nev.	675	10,080,000	100,800	100	3,436,800	Nov.	1878	1 00	1,394,400	Mar.	1864	4 00						39¾	39½	39⅝		40¼	40	40¼		525
Pewabic, C.	Mch.		500,000	20,000	25	185,000	June	1868	3 00	460,000	July	1873	1 00													
Phoenix, C.	Mch.		1,000,000	20,000	50	817,500	Sept.	1870	3 00	10,000	Dec.	1876	1 00													
Plumas	Cal.		1,000,000	100,000	10					130,000	Mar.	1879	10		3.35		3.35	3.30	3.40	3.35			3.35	3.30	3.35	3.30	2,750
Quincy, C.	Mch.		200,000	20,000	10					2,230,000	Feb.	1878	5 00						11⅛		11						10
Raymond & Ely, G. S.	Nev.	5,000	3,000,000	30,000	100	730,000	Jan.	1879	1 00	3,075,000	Sept.	1873	3 00													
Ridge, C.	Mch.		500,000	20,000	25	200,000				90,000	Feb.	1875	1 00													
Rye Patch	Nev.	1,600		30,000		157,500	Dec.	1878	1 00	105,000	Dec.	1877	0 25													
St. Joseph, L.	Mo.	2,000 acs.	1,000,000	100,000	10					250,000																
Savage, G. S.	Nev.	800	11,200,000	112,000	100	4,196,500	Feb.	1879	1 00	4,460,000	June	1869	3 00													
Seaton, G. S.	Col.	1,700	500,000	50,000	10	*					May	1877	0 10													
Sierra Nevada, G. S.	Nev.	3,650	10,000,000	100,000	100	2,350,000	Oct.	1878	3 00	102,000	Jan.	1871	1 00													
Silver Islet	Mch																									
Silver King	Ariz	1,500	10,000,000	100,000	100					450,000	Nov	1878	0 50						49		50						126
Standard	Cal.			50,000		50,000	July	1878	1 00	900,000	Feb.	1879	1 00													
Yellow Jacket, G. S.	Nev.	1,200	12,000,000	120,000	100	3,918,000	Jan.	1879	1 00	2,184,000	Aug.	1871	2 50													
McClinton	Cal.	1,000		60,000		45,000	Dec.	1878	0 25																	

Non-Dividend Mines.

Allouez, C.	Mch.		1,000,000	20,000	50	940,000	May	1876	5 00																			
Alpha, G. S.	Nev.	306	3,000,000	30,000	100	240,000	Mar.	1878	1 00																			
Alta	Nev.	600		108,000		1,101,000	Feb.	1879	1 00																			
Am. Flag, G.	Col.	5,300	600,000	60,000	10	*									21c		21c		26c	21c	21c		21c		22c		4,800
Andes	Nev.	2,000		100,000		355,000	Oct	1878	0 25																			
Baltimore Cons.	Nev.	1,050		84,000		1,015,000	Apr.	1878	0 50																			
Benton	Nev.	600		108,000		91,800	Dec.	1878	0 50																			
Bechtel	Cal.			60,000		81,000	Feb.	1879	0 10																			
Bertha & Edith. G.	Vir.	645 acs.	500,000	500,000	10	*									23c	20c	24c	21c	24c	22c	27c	23c	30c	26c	33c	29c	193,550
Best & Belcher, G. S.	Nev.	545	10,080,000	100,800	100	538,590	Jan.	1879	1 00																			
Boyle	Nev.	600		108,000		16,240	Aug.	1878	0 15																			
Buckeye	Col.		2,000,000	400,000	5	*									25c	22c	25c	23c	26c	23c	28c	22c	31c	22c	36c	30c	63,200
Bullion, G. S.	Nev.	943½	10,000,000	100,000	100	3,002,000	Dec.	1878	1 00																			
Caledonia, G. S.	Nev.	2,188	10,000,000	100,000	100	1,590,000	Jan.	1879	0 50																			
Cashier	Col.		500,000	250,000	2	*																						
Challenge	Nev.	90		50,000		10,000	Nov.	1878	0 20																			
Cleveland, G	Col.	3,715	250,000	25,000	10	*																						
Cons. Imperial, G. S.	Nev.	468	50,000,000	500,000	100	875,000	Feb.	1879	0 20												1							300
Con. N. Slope & E. T. C.	Col.	15,000	500,000	10,000	50																							
Con. Pacific	Cal.	1,400		60,000																								
Dahlonega	Ga.		500,000	250,000	1										21c	19c	21c	20c	22c	21c	22c	21c	24c	21c	25c	23c	44,600
Dana, C.	Mch.		500,000	20,000	25	68,000	Jan.	1863	0 50																			
Dawson, S.	Ont.		1,200,000	60,000	20			1878																				
Day	Nev.	1,500		100,000		70,000	Feb.	1879	0 15																			
Dayton	Nev.	1,600		100,000		750,000	Apr.	1878	0 25																			
De Frees	Ariz	1,500		100,000		115,000	Oct.	1878	15																			
Duncan, S.	Ont.		1,200,000	60,000	20	75,000	July	1876	41⅔								4⅝		4¾								275
Exchequer, G. S.	Nev.	400	10,000,000	100,000	100	480,000	Feb.	1879	1 00																			
Gold Placer, G.	Col.		5,000,000	200,000	25										29c	25c	28c	26c	27c	26c	29c	27c	30c	27c	23c	28c	73,935
Granville, G.	N. C.	357 acs.	1,000,000	100,000	10	*			0 50																20c		5.0
Humboldt, C.	Mch.		500,000	20,000	25	100,000	Sept	1878	0 15																			
Hussey	Nev.	4,500		100,000		110,000	Jan.	1879	0 15																			
International, S.	Ont.		1,200,000	60,000	20														50c		50c		25c	15c	22c		3,600
Julia, G. S.	Nev.	3,000	11,000,000	110,000	100	872,500	Jan.	1879	1 25																		150	
Justice, G. S.	Nev.	2,100	10,500,000	105,000	100	2,763,500	Jan.	1879	1 00																			
King's Mountain, G.	N. C.		1,200,000	120,000	10	*																						
Kossuth	Nev.	2,700		108,000		421,200	Aug.	1877	0 15																			
Lacrosse	Col.	3,900	1,000,000	100,000	10	*									31c	29c	32c	30c	32c	31c	31c	30c	32c	30c	35c	32c	64,100
Leadville	Col.														2.55	2.50	2.55		2.50		2.85	2.60	3	2.75	2.90	2.75	6,310
Leviathan	Nev.	2,000		100,000		240,000	May.	1878	05										30c	25c					32c	30c	505
Luzerne	Col.	4,200	5,000,000	500,000	10	*																						
Madison, C.	Mch.		500,000	20,000	25	123,000	Sept	1876	0 10																			
Mariposa preferred.	Cal.	44,387	5,000,000	50,000	100	1,425,000	June	1877	1 00																			
" common	Cal.	acres.	10,000,000	100,000	100	1,425,000	June	1878	1 00																			
McCracken	Ariz	4,500		100,000		100,000	Oct.	1878	0 50																			
Martin White	Nev.			100,000		650,000	Dec.	1878	1 50																			
Mesnard, C.	Mch.		500,000	20,000	25	160,000	Apr.	1876	0 50																			
Mexican, G. S.	Nev.	600	10,080,000	100,800	100	217,400	May.	1878	0 50																			
Minnietta Belle	Cal.	1,500		100,000		75,000	Apr.	1878	0 50																			
Mt. Bross Tunnel	Col.	8,600	2,000,000	200,000	10	*		1878																				
Navajo	Nev.	1,500		100,000		145,000	Feb.	1879	0 20																			
New York	Nev.	1,000		100,000		80,000	Feb.	1879	0 40																			
Occidental	Nev.	1,706		40,000		72,500	Feb.	1877	0 25																			
Orig. Keystone	Nev.	1,500	1,000,000	100,000	10	50,000	Oct.	1878	0 50																			
Overman, G. S.	Nev.	1,200	3,840,000	38,400	100	3,404,280	Jan.	1879	3 00																			
Osceola, C.	Mch.		1,000,000	40,000	25	2,567,880	Nov.	1877	3 00						11½	11¼											75
Petherick, C.	Mch.		500,000	20,000	100	165,533	Mar.	1876	0 50																			
Pleasant View, G.	Col.	1,200	200,000	20,000	10	*																						
Quicksilver preferred.	Cal	8,500	4,291,300	42,913	100	*																						
" common.	Cal.	acres.	5,708,700	57,087	100																						100	
Rockland, C.	Mch		500,000	20,000	25	495,000	Jan.	1874	1 00												11¾	11	11½		12		415
Seg. Belcher, G. S.	Nev.	160	640,000	6,400	100	244,800	Apr.	1876	5 00																			
Silver Hill, G. S.	Nev.	5,400	10,800,000	108,000	100	1,350,000	Jan.	1879	0 50																			
Silver Prize	Nev.	1,500		100,000		65,000	Feb.	1879	0 25																			
Star, C.	Mch.		500,000	20,000	25	265,000	Mar.	1876	0 50																			
Superior, C	Mch.		500,000	20,000	25	340,000	Mar.	1878	0 25																			
Sutro Tunnel	Nev.		20,000,000	2,000,000	10				0 50						3	2¾			3⅛		3⅛	3	3¼	3¼	3⅜	3¼	4,700
Tiptop	Ariz			100,000		120,000	July	1878																				
Tioga	Cal.	1,500		100,000		60,000	Dec.	1878	0 20																			
Trio	Col.	1,250	$150,000	150,000	1										51c												109	
Trojan	Nev.	1,500		100,000		240,000	Oct.	1878	0 25																			
Tuscarora	Nev.			100,000		20,000	Nov.	1878	0 05						9c	8c	9c	8c	10c	9c	10c	9c	12c	9c	11c	10c	12,800
Union Cons. G. S.	Nev.		10,000,000	100,000	100	310,000	Apr.	1878	0 25																			
Utah	Nev.	1,000		20,000		780,000	Feb.	1879	3 00																			
Ward	Nev	1,200		110,000		99,000	Jan.	1879	0 30																			
Wells Fargo	Nev.	1,500		108,000		216,000	Sept.	1878	0 50																			

g. Gold. s. Silver. L. Lead. c. Copper. * Non-Assessable. 44 15 16

Total Assessment levied to date $64,647,813

Total Dividends paid to date $153,590,231

Total Sales for the week ..... 505,848.

Comstocks, though what the improvement is predicated upon we fail to see. Certainly a more gloomy outlook for these mines than now exists we have scarcely ever seen. There is not a single mine on the lode producing sufficient to return any thing to its stockholders, and but few paying the enormous expenses of exploration and developments now being so extensively prosecuted in all parts of the lode, and for the continuation of which work stockholders are daily liable to be called upon for the inevitable assessment. A bill has been introduced in the Nevada Legislature to compel mining superintendents to give notice when diamond drills are to be used, and to furnish samples for every six feet passed through. Should this bill pass the Legislature, it will, no doubt, be productive of good results and be the means of putting all stockholders upon nearly an equality, as the abuses in the use of this machine, especially on the Comstock, are notorious, and have been the means of ruining thousands to the enrichment of rings.

Alta is steady, with no particular feature in the mine.

Argenta has been very active on the San Francisco market, at from 90c. to $1.40 per share, with later sales at $1.20. This mine is said to be looking very well.

Belcher shows an improvement of $3 per share. The vein on the 2360-and 2560-foot levels of this mine has been laid bare for nearly a thousand feet, ready for cross-cutting, which can be inaugurated at any time.

Belle Isle has been fairly active in San Francisco at from 25c. to 35c. The ore veins in this mine are quite narrow, but are improving as development progresses.

Best & Belcher shows an improvement of $1 per share. The Osbiston shaft is down nearly 500 feet, water strong.

We have no quotations of Belmont. The stock is very sparingly dealt in on the San Francisco market at from 40c. to 50c. This company is now extracting about 15 tons of ore per week, having an average assay value of nearly $100 per ton. The mine is looking well at all points.

Bullion is showing some improvement. The east cross-cut on the 1840 level of this mine has been started.

Bodie is lower. On the 11th this stock had declined to $5½ per share, but has since recovered, and closed yesterday at $6. This company's mill is now employed on crushing ore from the Bulwer mine, which has accumulated about 1000 tons at the dumps, with the prospects for an almost indefinite supply.

Caledonia shows some improvement, and quite satisfactory progress is being made in the mine.

Chollar-Potosi shows a marked advance. The water in this mine has decreased somewhat, but still averages 85,000 gallons per day. The Chollar-Norcross shaft has reached a depth of 2331 feet.

Con. Imperial has improved. A drift has been started from the 2600 level of this mine to connect with the old workings on the 2400 level of the Yellow Jacket.

The old bonanzas have advanced somewhat. The California Company is taking out about 12,000 tons per week of low-grade ore, while the yield from the Con. Virginia is unchanged, the February product amounting to $296,000. The C. & C. shaft is 125 feet below the 2150 level.

Crown Point opens to-day at $7, the highest of the week. No change is reported from this mine. The repairs to the main incline are going forward.

Consolidated Pacific opens to-day at $1.90 per share. Very favorable progress is being made in this mine, and the ore vein is two feet thick and assays very well.

The stock of the Eureka Consolidated Company closed yesterday at $26 per share, the lowest price of the week, and a very low figure considering the outlook as per letters and advices from the mine. The furnaces are running well and reducing 200 tons of ore per day, with the prospects of continuing this product for a long time. Very satisfactory progress is being made in all parts of the mine.

Exchequer shows a slight advance. The mine is reported as looking well.

Gould & Curry shows an advance of $2 per share. Water in this mine is the main feature.

Grand Prize is a little better. The ore stopes of this mine continue to look well, and are yielding sufficiently to keep the mill amply supplied.

Pumping is being actively prosecuted in the Hale & Norcross mine. The stock of this company has advanced from $14 to $17.

The ore veins in the Hamburg mine are reported as looking well, and the most active work is going on at the mine. The stock has been very sparingly dealt in on the San Francisco market at from 40c. to 50c. per share.

The stock of the Independence Co. shows some improvement on the San Francisco market, recent transactions in important lots having been made at from $1.40 to $1.75 per share. This company is now crushing about 20 tons of ore per day.

Julia is very steady, and opens to-day at $5½, the same price as reported a week ago. The working force has been increased in this mine, and active operations are proposed now that the mine can avail itself of the privileges of the Sutro Tunnel, arrangements to that effect having been concluded on the 7th inst. This company has paid over to the Tunnel Company $100,000 for the drift run by the tunnel, and having also signed a contract to pay royalty, the Sutro Tunnel Company has allowed it to pump its water through the tunnel at once. Pumping has begun and is watched with great interest. The Sutro Tunnel placed its compression pipes at the disposal of the Julia mine.

Jackson has been sparingly dealt in at San Francisco at from $7 to $7.50 per share. It is stated that the ore shipped from this mine to the Metamoras furnaces is of a very fine character, the amount averaging 300 tons per week.

Leviathan opens to-day at 35c., quite a decline. This mine is reported as looking well.

Manhattan has levied an assessment of $1 per share, and this in the face of a continued production from the mine. This stock has recently sold on the San Francisco market at greatly reduced rates, and it may be possible, in view of all the apparent facts in the case, that a ring is at work on this property.

Mexican and Ophir have both advanced, and both mines show but little change.

Northern Belle has materially improved, a recent accident at this mine temporarily threw some of the miners out of employment and allowed the water to gain upon them.

The new bonanzas have considerably improved, but we have no striking intelligence from the mines.

The *Commercial Herald* of the 6th inst. says of the market: "The feeling in mining stocks has not improved since our previous report, all the leading shares showing a recession to some extent. This uncertain and rather soft condition of the market did not prevent the offering of a very considerable amount of outside and generally worthless—except to make a good turn in a small way—stock, a field of operations that is proportionately more profitable than any other. The constant prediction of a sharp and well-planned deal 'in spring' seems to lose force as that period approaches, and we fear that bonanzas can not be revealed at pleasure as the insiders would have the public believe. In Gold Hill mines the fall in the price of shares is rather too rapid to strengthen hope of a big revelation in that direction, and as for the north end, the public have been deceived almost beyond endurance. In this connection we would mention that the Nevada Bank in this city has reduced the rate at which Con. Virginia and California stock will be taken as collateral to the low figure of $4 per share. This is astonishing to all those who have watched the course of this wonderful bonanza, which in the past period of a little more than five years yielded over $104,000,000 in bullion, and distributed $71,280,000 in dividends. Eureka District is now assuming marked prominence. We learn that the Richmond company has disbursed eighteen dividends, amounting to $1,850,000, and Eureka Consolidated forty dividends, aggregating $3,000,000, since they were opened. Both these mines are reported to be in excellent condition. The 'bonanza mines' produce the usual quantity of ore, but it is low grade. Considerable amounts of the stock changed hands at lessened prices. Sierra Nevada has been rather well maintained, but closes at a decline. The public are anxiously waiting for something more definite from this mine. Yellow Jacket has been declining. We fear the bonanza developments in the Gold Hill region in the near future do not promise much just now."

ASSESSMENTS with dates when delinquent: Red Hill Hydraulic Mine, 5c., March 31st; Manhattan, $1, April 8th; South Bulwer, 10c.; University, 10c., April 5th; Modoc, 50c., March 24th.

The Niagara Gold & Silver Mining Co. has increased its capital stock from $6,000,000 to $10,000,000.

Miscellaneous Stocks and Quotations.

Sales and quotations of the stocks and bonds dealt in here, at Philadelphia and Baltimore, for the week ending the 13th inst. are given in the following tables. The Philadelphia quotations will have a * affixed. The Baltimore quotations are indicated thus †.

STOCKS.	Par value.	High'st	Lowest	Closing	Sales: Shares.
American Coal Co.	$25	. . ..	.....	30	.....
St. L., I. M. & S. R. Co..	100	16⅛	14½	15¾	1,350
Spring Mt. Coal Co.	50	.....	.....	50	.....
*Cambria Iron Co..	50	.....	.....	64	.....
*Penn. Salt Mf'g Co.	50	.....	.....	74½	.....
*Westm'land C. Co.	50	.....	.....	52	.....
*Buck Mt. Coal Co..	50	.....	.... ..	35	.....
*Schuyl. Nav. Co...	50	.....	.....	.....	.....
†B. & O. RR. Co. 1st pf	.....	103¼	103	103	136
†B. & O. RR. Co. 2d pf	100	100	99⅞	98	40
" " " " com	90	96¾	94	94	242
†George's C'k C. Co	100	.....	.....	55	.....
†S. Clara M'g Co...	100	.....	.....	25	.....
†Atlantic Coal Co.	10	.....	.....	90	.....

BONDS.	Princ'l. When Due.	Int'est. When Due.	Hig'st.	Lowest	Amount.
D., L. & W., 7s, conv	1891	J. & D.	.....	102	.....
" " " " 2d mtge.	1882	M. & S.	104	.....	$6,000
N. J. C., 1st mtge. new	1890	F. & A.	116	.....	23,000
" " " 1st mtge., con	1899	Q.	85⅞	84	*710,000
" " " convt.	1902	M. & N.	85½	84	*124,000
Lehigh & W. B., con	1899	Q.	75½	70	†116,000
Am. Dock & Imp. 7s	.....	J. & J.	63½	63	11,000
St. L. I. M. & S. 1st mt	1892	F. & A.	111	110½	10,000
Ches. & O., 1st mtge	1899	M. & N.	.....	.....	.....
D & H C Co., 1st m. rg	1884	J. & J.	99¼	.....	1,000
" " " " " "	1891	J. & J.	99¼	99	16,000
" " " " m. loan cp	1894	A. & O.	102¼	101½	23,000
" " " " " rg.	1894	A. & O.	.....	.....	.....
" " " " new mge.	.....	.....	.....	.....	.....
*L. V. R., 1st m. 6s. cp.	1898	J. & D.	112	.....	2,000
" " " rg.	1898	J. & D.	112	.....	9,000
" " " 2d m. 7s, rg.	1910	M. & S.	116¾	.....	2,000
" " " con. m. 6s, rg	1823	J. & D.	101⅞	101¾	4,000
" " " 6s cp.	1923	J. & D.	102	.....	2,000
*Pa. RR., 1st m. 6s, cp	1880	J. & J.	104½	.....	4,000
" " g. m., 6s, cp.	1910	J. & J.	112	.....	1,000
" " " 6s, rg.	1910	A. & O.	.....	113½	.....
" " con. m. 6s, rg.	1905	Q.	.....	.....	.....
" " " 6s, cp.	1905	J. & D.	101½	.....	1,000
" " new loan, 5s	.....	.....	113	.....	4,000
*P. & R. R., 1st m. 6s, R. C. 43-44.....	1880	J. & J.	.....	.....	.....
P. & R. R., 1st m. 6s, R. C. 48-49.....	1880	J. & J.	.....	.....	.....
P. & R. R., 2d m. 7s cp	1893	A. & O.	.....	115	.....
" " " scrip....	1882	J. & J.	50	.....	500
" " " in. m. 7s, cp	1896	J. & D.	49½	.....	4,000
" " " c. m. 7s, cp.	1911	J. & D.	104	.....	1,000
" " " " 7s. rg.	1911	J. & D.	104	.....	13,000
" " " cvt. 7s, R. C	1893	J. & J.	.....	.....	.....
" " C. & I. Co., Deb 7s, R. C.....	1892	M. & S.	40	.....	19,000
& R. C. & I. Co., m. 7s, R. C.....	'92-3	various	.....	.....	.....
*L. Nav. Co., 6s, rg. m.	1884	J. & Q.	104½	104¼	1,500
" " RR., rg. m.	1897	F. & Q.	.....	.....	.....
" " cvt. co. G. R.	1894	M. & S.	93	.....	2,000
" " " Gold R. C.	1897	J. & D.	94	93½	5,000
" " con. m. 7s, rg.	1911	J. & D.	. . .	.....	.....
*P. & N. Y. C., 7s, R. C.	1896 / 1906	J. & D.	117¾	.....	1,000
*Pa Canal, 6s. cp..	1910	J. & J.	68	.....	1,000
*Schuyl. Nav., 1st m. 6s. rg.....	1897	M. & Q.	.....	63	.....
*Sus. Coal, 6s, rg...	1911	J. & J.	91	.....	2,000
†Balt. & O. RR., 6s..	1880	J. & J.	.....	101¼	.....
" " " " 6s..	1885	A. & O.	.....	107¼	.....

Total transactions for the week.....$1,119,000

* Assented. † $51,000 selling at from 50@53½.

Coal Stocks.

NEW YORK, Friday Evening, March 14, 1879.

There has been a very fair business in the coal stocks in this market, and although some improvement occurred previous to the Delaware & Hudson Canal Co's., sale, yet it has been entirely lost since. All present influences are of a nature to depress the prices of the stocks. Delaware & Hudson Canal has sold at 42@40, closing at 40¼, the transactions amounting to 5339 shares. Delaware, Lackawanna & Western RR. records 146,165 shares, at 48¾@46½, closing at $46¾. The sales of New Jersey Central have amounted to 36,915 shares, at 38¾@37, closing at 37½. Twenty shares of Pennsylvania Coal Co. sold at 135.

In Philadelphia the dealings have been very light, and the fluctuations have been small.

THE PENNSYLVANIA RAILROAD ANNUAL MEETING.

At the recent annual meeting of stockholders of the Pennsylvania Railroad Company, several of the

COAL STOCKS.

NAME OF COMPANY.	Capital Stock.	Shares. No.	Shares. Par Val.	Last Dividend. Mo.	Y.	A't.	Rate per Ann.	Quotations of New York stocks are based on the equivalent of $100. Philadelphia prices are quoted, so much per share. Mar. 8. H.	Mar. 8. L.	Mar. 10. H.	Mar. 10. L.	Mar. 11. H.	Mar. 11. L.	Mar. 12. H.	Mar. 12. L.	Mar. 13. H.	Mar. 13. L.	Mar. 14. H.	Mar. 14. L.	SALES.
	$		$				Per c'nt													
Consol. Coal.	10,250,000	102,500	100	Jan.	77	2½	....													
Del. & H. C...	20,000,000	200,000	100	Aug	76	4	9	41⅛	41⅛	42	41	41⅜	41	41¼	40⅝	40⅝	40⅛	41⅛	40	5,339
D., L. & W. RR.	26,000,000	524,000	50	July	76	2½	5	48¾	46¾	48⅝	47⅛	48⅝	47¾	48⅛	47⅜	47¾	46½	47⅜	46⅜	146,165
Lehigh C. & N	10,...,850	208,971	50	Nov	76	1½	5½	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15½	15⅜	15½	15⅜	15⅝	15⅜	482
Leh. V'y R. R	27,228,855	540,858	50	Mch	79	1	4	35¼	35⅛	35⅛	34⅞	35¼	35	35⅛	35	35⅛	35	35¼	35	548
Maryl'd Coal	4,100,000	44,000	100	Jan.	76	1½	1½	....	....	....	....	....	....	....	....	....	....	....	....	....
N. J. C. R. R.	20,000,000	206,000	100	Apr	76	2½	2½	38⅜	37¾	38⅜	37⅞	38	135	38¼	37½	38	37	37⅜	37⅛	36,915
Penn. Coal...	5,000,000	100,000	50	May	78	3	....	....	....	....	....	135	135	....	....	....	....	....	....	20
Penn. R. R...	68,870,200	1,337,404	50	Nov	78	2	8	35½	34⅞	35	34¼	35	34⅝	34¾	34¼	34⅝	34⅛	34¼	34⅛	20,988
Ph. & R. R. R.	34,278,175	685,563	50	Jan	76	2½	10	13⅛	12⅞	13	12⅞	12⅞	12¾	12¾	12⅝	12⅝	12⅜	12⅜	12⅝	6,292

The Delaware and Hudson Canal Co. has paid in dividends to date $38,821,104, and the Philadelphia and Reading $43,012,497

Total Sales.....216,747.

"ring" abuses which have long been matters of public report and which, justly or unjustly, have brought much odium upon the management of the company, were brought before the stockholders in the form of resolutions, which were quietly pigeon-holed by referring them to the incoming board of managers. Of course they will be heard of no more till the next annual meeting. The following are the resolutions referred to:

Mr. E. J. Lenman rose and offered the following resolution in the interest of retrenchment and reform:

Resolved, That the President and Directors of the Pennsylvania Railroad Company are respectfully directed to make the following reduction in the salaries of the employés of the Pennsylvania Railroad Company:

On salaries of $1200, and not reaching $2000, a reduction of 10 per cent.

On salaries of $2000, and not reaching $4000, a reduction of 20 per cent; and on all salaries of and above $4000, a reduction of 30 per cent.

Resolved, That the President and Directors of the Pennsylvania Railroad Company are respectfully requested to place upon the Pennsylvania Railroad, and all other railroads which they operate, their own express, to the exclusion of all other express companies; that they shall not purchase Adams's Express, or any other express company, to attain the object for which this resolution is offered—namely, that they shall build, furnish, and equip their own express cars, to be run in the interest of the shareholders of the Pennsylvania Railroad Company.

Resolved, That the President and Directors of the Pennsylvania Railroad Company are respectfully requested to build and place upon the Pennsylvania Railroad, and upon all other railroads which they operate and control, their own sleeping, parlor, and palace cars, to the exclusion of the Pullman Palace Car Company and all other public and private companies.

Resolved, That the President and Directors of the Pennsylvania Railroad Company be instructed to report at the next meeting of the stockholders the number of employés who receive a salary of $1000 per annum, and the number of those receiving salaries above that amount, and also the specific duties and title of each officer in the employ of the company who receives a salary of and over $2000 per annum, and the amount of salary which such officers individually receive.

Mr. Dunlap offered the following:

Resolved, That the Board of Directors of the Pennsylvania Railroad Company, in their next annual report, be and are hereby authorized and required to give an itemized statement of the annual cost of running special trains for the accommodation of the officers and directors of the road, and how much of this service can with advantage be dispensed with.

Sec. 2. And further report annually the number of employés who receive from $1000 to $2000 per annum; the number who receive from $2000 to $3000 per annum; the name, office, and salary per annum of all officers or employés who receive $3000 and upward per annum.

Sec. 3. And further report to the stockholders annually (and as much in detail as possible, the expenses of the offices of the Pennsylvania Railroad Company that are located in New York, Jersey City, Philadelphia, and Pittsburg.

This was referred to the incoming Board of Directors.

Resolved, That the officers elected by the stockholders of the Pennsylvania Railroad Company for 1879 and 1880 be and are hereby prohibited from issuing annual or trip passes over the Pennsylvania Railroad and branches, except to employés in the service of the company, and to them only when on business for the company.

Ex-Sheriff Elliot thought that the resolutions presented by Mr. Lenman were tantamount to a general arraignment of the managers of the corporation, and he therefore moved their reference to the incoming Board of Directors, and that the Directors report at the next annual meeting.

The following very serious charge was made by Mr. Edward T. Parker:

To the President and Stockholders of the Pennsylvania Railroad Company:

GENTLEMEN: In the year 1872 a tract of land in Luzerne County, Pa., known as the "Nicholas Rope Tract," was owned by the wife of J. W. Rhoades. Previous to this, the tract had been put up for sale for taxes, and sold for $250, and once for $280, and was purchased for Mrs. Rhoades.

J. W. Rhoades made some $400 out of the land by cutting and selling the timber that was on it. Rhoades was anxious to sell the land and offered it for sale, but no one offered to buy, as there was no coal on the land, no timber left, and every one in that neighborhood knew that the land was of very little value.

At this time, Alexander Silliman was told by Rhoades that the Pennsylvania Railroad was buying land in that vicinity, and he thought Mr. Silliman could sell the land to the railroad company. Silliman said to Rhoades, "Fix your price, put it down on paper, and give me six months to effect the sale."

Rhoades consulted his wife, and she told him that, as the railroad was going to buy it, the price might as well be put at $40,000 as any thing else. Rhoades then wrote on paper the price, $40,000, as agreed upon, and gave the paper to Silliman. At that time Rhoades would have taken $2000 for the tract, as he had offered it to Silliman for that price the year before, but Silliman refused to take it. He has since stated that he would have been glad to have got $5000 for it, or any thing, so he got rid of it. Silliman has also stated that he would not have it for the taxes.

Williams Anspach at that time was and yet is a director of the Pennsylvania Railroad Company. Mr. Silliman saw Anspach, and it was arranged between them that Anspach would buy the track for the railroad company. Understood the title to be held by Mr. Fowles (trustee).

The price fixed upon was $98,000, to be paid in Pennsylvania Canal bonds, the bonds to be taken at the rate of 80 cents upon the dollar. Rhoades was to get his $40,000 in cash, but was not told any thing about the $98,000. The deed was made to the trustees, signed by Rhoades and his wife. The consideration mentioned in the deed was $98,000, but Rhoades and his wife did not know and were not informed of the fact. Anspach drew from the company, to pay for the tract, Pennsylvania Canal bonds of the face value of $98,000. Rhoades received his $40,000 partly in cash and partly in bonds at the rate of 80 cents on the dollar, except the sum of $350, which Anspach retained for expenses.

The balance of the bonds was divided into six shares. Silliman says that he and his partner, Mr. Louis Rothermel, got two of these shares, and that Anspach retained four shares, stating to Mr. Silliman that he (Anspach) had to share with one or two others who had influence with the company. The bonds were carried in the company's assets at $98,000, upon which interest at 6 per cent has been paid ever since, guaranteed by the Pennsylvania Railroad Company. The first Rhoades knew of the $98,000 was by seeing the published statement of the assets in the annual report.

I became aware of this transaction shortly afterward, and went to the tract and investigated the matter, getting the statement of the people living in the locality, the statement of Mr. Rhoades, of Mr. Silliman, and Mr. Rothermel. Also the statement of the engineer who viewed the tract of land for the company, and a statement from Mr. Anspach, and furnished all these papers to the President, Mr. Scott, as fast as I ascertained the facts. I gave them to the President, and over two years ago the evidence was in the hands of Mr. Scott, and over one year ago in the hands of the Solicitor, who reported promptly that there was a good case against Anspach, and fully indorsed my charge.

I repeatedly and persistently demanded that this matter should be presented (as my letters to Mr. Scott and the board will show), calling their attention to the fact that the statute of limitations would soon expire, and the guilty director thus escape. Before our last annual meeting, I was assured by Mr. Scott that the solicitor would prosecute the case without delay when I threatened to bring the case before the stockholders.

The following May I found that it had not even been brought to the knowledge of the Board of Directors. I insisted on its being brought before the Board. He refused to do so, and I brought it to their notice myself.

I am now informed that the matter has been settled, but in what manner I can not learn, although I informed them I had other important testimony in the case to give them.

The guilty director has not been brought to justice, but has been permitted to remain in the board, and the time for his punishment has nearly expired. I bring this matter to the stockholders, that they may take action to protect their interest against future betrayals of trust as well as to see that the leniency of the officers of the company toward a fellow-officer has not jeopardized our interest. I therefore ask the adoption of the following resolution:

Resolved, That a committee of the stockholders be appointed to investigate the purchase of the "Nicholas Rope Tract" of land, and to take such action in that matter as they shall deem advisable, and to report at the next meeting of the stockholders.

The matter was referred to the Board of Directors, where, of course, it will sleep till the next meeting.

AUCTION SALES:

Morris & Cable Silver Mining Co.—$3500 of the company's bonds at 5 per cent.

Schuylkill Navigation Co.—$200 first-mortgage 6s at 87 per cent.; $648 do. do. second-mortgage 6s, at 60; $650 do. do., boat loan, 7s, at 60 per cent; 96 shares do. do., preferred, at 6½; 126 shares common, at 3.

Chesapeake & Delaware Canal Co.—45 shares, at 2¼; $1600 do. do. 6 per cent bonds, at 75 per cent.

Lehigh Coal & Navigation Co.—$12,216 6s. of 1884, at $104@104½; $2000 6s. of 1897, at 106¼.

Lehigh Valley RR.—$1000 6s at $112.

The Lehigh RR. Co. has declared a quarterly dividend of one per cent, payable on and after April 15th.

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